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# Gleanings in Bee Culture

VOL. XXXV. MAY, 1, 1907. NO. 9.



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# GLEANINGS IN BEE CULTURE

Published by The A. I. Root Company, Medina, Ohio

E. R. Root, Editor    A. L. Boyden, Advertising Mgr.  
H. H. Root, Asst. Ed.    J. T. Calvert, Business Mgr.  
A. I. Root, Editor of Home Department

Vol. XXXV.

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No. 9.



THE WEATHER is a topic entirely safe to talk upon only in the past tense. The latest forecast of ye editor, p. 537, was that indications were for an early spring. The morning on which that reached Marengo the thermometer stood at 26, a cold spell having been on for some days, and no knowing when it would terminate. I am much afraid of the effect on fruit-bloom, as the buds were just ready to open in March.

PROF. BIGELOW speaks of the soporific effect of the murmur of bees, p. 551. I think I never saw it mentioned in print before. I never tried the soothing effect of ten thousand honey-bees, more or less, about my pillow at night; but I have felt and seen the effects of the murmur of thousands of bees coming and going on a still summer day upon one sitting by the entrance of the hive. Indeed, has that not been the general experience for generations past? Else why do the poets sing of the "drowsy hum" of bees?

MR. JAY, please have some respect for the established usage of terms. You use the term "dual-queen system," p. 547, apparently as applying to any case where there is more than one queen in a hive. It is handy to have that term restricted to mean what it has heretofore meant, a system in which a virgin is caged in a fertilizing-hive, a free queen, virgin or laying, being in the same hive, and in the same compartment. Certainly there was no "dual" in the case when you took away the queen and afterward gave a cell. But you've asked some interesting questions, and I hope you'll not rest till you furnish us the proper answers. [But, are you not referring to the *dual plan for introducing*? In our opinion the Jay did not mean that.—Ed.]

PROF. GASTON BONNIER reported that in the morning there are bees that go out as *prospectors* (*chercheuses*), looking up where nectar may be found, later in the day becoming gatherers. A Straw mentioned last year, p. 1416, and a footnote, said, "This may be true; but I do not see how it can be proved." It seems that Prof. Bonnier made this report before the Academy of Sciences, and *L'Apiculteur* says, p. 39, "Mr. Root, perhaps, does not know that M. Bonnier brings before the Academy of Science only verified facts." Then follows an interesting account of the experiments of that "marvelous and patient observer," Prof. Gaston Bonnier.

"WE MUST convince the American mothers that honey is the best sweet for children. If we succeed, there need be no worry about the sale of honey." That's what ye editor closed with, p. 541, possibly for want of room to say more. If the column had been longer he might well have added: "This for two reasons: First, the child that eats honey is likely afterward to be a man or woman that eats honey; second, if honey is kept on the table for the children, the grown-ups are more likely to eat of it too."

Allow me to add what emphasis I can to what ye editor has wisely said in those last two paragraphs. The women are the ones to talk to about honey, and the special point to press is the matter of honey for children. In some cases the idea is to be combated that all sweets are bad for children. The text to be enlarged upon is something like this: The universal craving of children for sweets is a natural and healthy craving. Good sweets, unadulterated sweets, are good for children. The *best* of all sweets is honey.

EUROPEAN PRICES for honey are much above American. Americans in general are more extravagant than Europeans. If Europeans eat honey at their higher prices, are you sure that Americans wouldn't eat just as much honey if the price were advanced 50 per cent? [It does not seem that low prices help to sell honey, as most people regard it as something special, and I know Europeans willingly pay a good price for



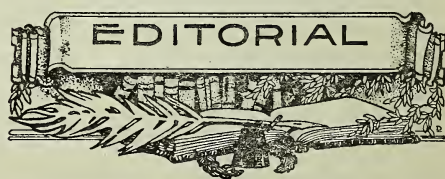
honey which suits them. I have paid 60 cts. for Narbonne honey and 50 cts. for heather, neither of them superior in any respect to much of our honey. With the well-to-do New Yorkers I do not think the price cuts much of a figure. The principal reason why they do not buy honey is chiefly because no one asks them to. As a rule, also, the grocers are wholly ignorant on the subject of honey, and hence are poor honey-sellers. A man who fully understands honey, and who gives a "square deal," can sell at European prices right in New York to-day, and it seems to be true of other cities, though I don't know. What the New Yorkers need is a honey show or fair, to show them.—W. K. M.]

CHILDREN often get hold of part of the truth, and then go wrong with it. Sometimes editors do the same. Ye editor speaks, page 558, of my scheme "of two men carrying out one colony with a rope." Bless your heart, Mr. Editor, I have no such scheme for two men. It's a good scheme for two women, or for one woman and part of a man. When my assistant looked at those two men carrying bees on p. 557 she said, "Two men have used precisely the same device here for many years, carrying bees both in and out." But I don't always have two men. Last fall Philo carried them in alone; and this spring he carried them out alone; as said on p. 536, it took him five hours to carry out the 166, placing them at an average distance of seven or eight rods from the cellar. (But he could not have done it with merely hand-holes or short cleats.) On the whole, I suspect it cost me less than to have had two men. With the barrow arrangement the time of two men is taken in setting the hives on the barrow and then lifting the hives off the barrow. Philo just picked up each hive, went along with it, then put it down, and that's all there was to it. I doubt if two men with a barrow could have done it in half the time. [But two men can carry more than two hives at once—enough more, surely, to make up for the loss of time in handling hives twice—ED.]

YOUR LOGIC, Mr. Editor, p. 539, is a little off color. "A literary paper could wield a mighty influence because of the magnitude of its field;" but the chosen field of GLEANINGS is comparatively small; so, because it has no great influence it is under no obligation to use upon the right side what influence it has. Even if that sort of logic would pass muster, there's another side to it. Take a literary magazine with five times as many readers as GLEANINGS, and you are likely to say it has five times as much influence. Wrong. The readers of GLEANINGS are a special class, with a special interest in GLEANINGS, and specially affected by anything it does. If each reader is influenced five times as much by a better spelling in GLEANINGS, as he would be by the same spelling in a literary magazine, will not the influence of GLEANINGS be just as much as that of a literary magazine with five times as many readers? Please convey to W. S. Wingate my thanks for his encouraging figures. [You are as-

suming that GLEANINGS would have five times the influence with its clientele as the other papers with their larger class of readers. To adopt your own language, "Your logic is a little off color." No, we don't think GLEANINGS has any more influence *per capita* reader than a journal like the *Ladies' Home Journal*.—ED.]

"BESIDES," said I, p. 566, "it costs more for two shallow stories than for a single deep one," and you reply, Mr. Editor, "They are listed at the same price in the supply catalogs." Do you mean by that that I was mistaken, and that two shallow stories cost the same as a single deep one? [We mean exactly what we said in our footnote in the former issue; viz., the price of two shallow hives supplied with shallow extracting-frames and division-board is just one-half, as a rule, the price of a single body with frames and division-board of the same capacity. In catalogs having a scale of prices from one to twenty-five or fifty, we find that there is a little variation, and in not every case does the price figure exactly one-half. It does, however, figure just one-half, as a rule, as, for instance, quoting from one catalog, the price of ten shallow bodies with shallow extracting-frames and division-board is \$4 in the eight-frame size, while ten bodies of equal capacity with frames and division-board, eight-frame size, are \$8. In a jobbing way the cost of the latter body with frames and division-board is exactly double the cost of the two shallow bodies in the ten-frame size, while in the eight-frame size the cost of the single body is one cent more than the two shallow. It would not, of course, be fair to compare prices on two shallow hives that had more comb surface than a single L. hive.—ED.]



It will be very important this year to stimulate colonies by feeding moderately and giving them good warm homes. The winter-cases that may have been on should be left on until settled warm weather comes on.

As showing how things are working in the honey market, a bee-keeper who called on us the other day stated he had an order to be delivered next fall for 200 cases of comb honey at 16 cts. per section (4×5), or about 18 cts. per lb.

THE British Bee-keepers' Association has elected the Master of the Wax Chandlers' Company as its president. The "Master" at present is Mr. H. C. Todd; but he is elected for only two years. In future the "Master,"

whoever he may be, will occupy both offices. The wax chandlers are as old as the hills, and are merely honorary in their nature.

The next National Irrigation Congress will be held at Sacramento, Cal., the first week of September, and promises to be the greatest yet held, and, moreover, the most interesting. We mention this because our western readers are largely dependent upon irrigation for their success in producing honey, and a larger area of irrigated land is one of the certainties of the future.

The bee-keepers of Minnesota are rejoicing over the fact that they have at last secured a foul-brood law. In brief, it provides for the appointment of an inspector at a salary of \$1000 a year. The other provisions are about the same as those in the celebrated Wisconsin law. The Minnesota bee-keepers have tried hard and long for this; but, undaunted, they kept hammering away at their legislature until their efforts were crowned with success.

#### HOW THE MASSACHUSETTS PURE-FOOD LAW IS WORKING.

The pure-food law amounts to something in Massachusetts, for during the month of January there were twenty-seven successful prosecutions for violations of the law in Boston. One of the principal grocery concerns of the city, with a great name, it is stated, was convicted of ten violations of the law. The fines imposed for the month amounted to \$1565, so that the law must be nearly self-sustaining.

#### FOUL-BROOD LEGISLATION IN PENNSYLVANIA.

REFERRING to the foul-brood bill that is now pending before the Pennsylvania legislature at Harrisburg, the president of the Pennsylvania Bee-keepers' Association, Mr. H. C. Klinger, requests all bee-keepers of his State to write to their senators and representatives to support the bill; otherwise it may fail for lack of interest, as there are other bills on the calendar that are crowding and may push this aside unless its supporters get busy. The bill has been referred to the Committee on Agriculture, which has been given a hearing before Prof. H. A. Surface and the president of the association, Mr. Klinger. It has been reported favorably, and it is now very important that the Pennsylvania bee-keepers write to their State legislators at once.

#### PLANTING HONEY-BEARING TREES FOR FENCE-POSTS.

CARL SONDEREGGER, who surely ought to know, advises the farmers of Nebraska, Kansas, Oklahoma, and Texas to plant for fence-posts and other uses the following honey-bearing trees: First, the black or yellow locust; second, catalpa; third, Russian mulberry; fourth, the honey-locust. This looks like

good sound advice, for at the present rate of increase in the price of lumber it looks as though each farmer would require to grow his own lumber or do without it. We endorse his selection.

#### BETTER PRICES ON PURE SYRUP.

The *Florida Agriculturist* is quite enthusiastic over the prospects of the cane-syrup industry, which, it claims, can command a price of 75 cents to \$1.00 a gallon. Probably this is true; but if it were not for the national pure-food law the syrup-owners could not get such prices, for glucose would keep the market down to a ruinously low level, and we know considerable mixing was done until lately. If Florida is anxious to supply the United States with good syrup, a State pure-food law working in conjunction with Uncle Sam is a necessity in this case.

#### NEW MAILING-WRAPPER FOR GLEANINGS.

THE reader's attention is drawn to the fact that, beginning with last issue, we are mailing GLEANINGS in flat wrappers. The increased size of the journal, together with the higher quality of half-tone paper necessary for bringing up the engravings, made it necessary for us to change the form of wrapping. We believe now there will be no further complaints of missing numbers or of missing sheets from any number. While this will cost some extra, the increasing prosperity of GLEANINGS renders increased expense imperative. Verily, GLEANINGS was never in a more prosperous condition than it is now.

#### ALFALFA WITH YELLOW BLOSSOMS.

It is stated that Prof. Hansen, an agricultural explorer of the United States Department of Agriculture, has brought to this country a quantity of seed of a new species of alfalfa with yellow blossoms, which is said to be very hardy, withstanding a temperature of 40 degrees below zero. Experiments will be commenced at once with the new plant.

We think the great trouble with novelties is to get the farmers to take hold of them. Sainfoin, which is quite common in England, Belgium, and France, and produces hay of very high quality, is almost unknown to the farmers of this country. Anyway, we bee-keepers will be glad of a new alfalfa if it yields honey as its sister does.

#### RECOMBING AND DISINFECTING.

WHILE we have no foul brood in Medina, yet we have taken precautions to give our empty hives a hot steam bath and a painting inside with crude carbolic acid, and, what is more, we are fumigating all empty combs with formaldehyde. Any combs not perfect, or that are old, are melted up into foundation. As we have before remarked, we are recombining and almost constantly disinfecting.

We consider it very important that any queen-breeder or shipper of bees should



not only have a clean bill-of-health, but should be taking preventive measures so that, if the germs of disease do work themselves in, they may be destroyed before they do any damage.

#### JAMES HEDDON'S NEW INVENTION.

The question is sometimes asked, "What has become of Heddon?" meaning, of course, James Heddon, of Dowagiac, Michigan; inventor of the hive which bears his name. Well, he is still very much alive but engaged now in the manufacture of artificial lures for anglers. He is the patentee of several wooden minnows which are in use by bait-casters; indeed, he is the head-center of the Dowagiac school of bait-casters as distinguished from the Kalamazoo school of anglers who are celebrated the world over. Bait-casting is done on the same lines as fly-casting, and is quite different from the old style of fishing with a bait, requiring considerably more skill for its successful accomplishment.

#### LIVE-BEE DEMONSTRATION AT THE JAMESTOWN EXPOSITION.

MR. CHARLES KOEPPEN, of Fredricksburg, Va. expects to give some live-bee demonstration work at the Jamestown exposition. For this purpose he is erecting a structure 30x50 feet. When it is installed it will cost something like \$1400. It will be known as the Live-bee Exhibition, for the bees will be handled in connection with the moving picture apparatus. In the mean time he expects to sell standard bee-books. This live-bee demonstration work will appear on what is known as the "War-path," and we are of the opinion that it will be one of the attractive features and certainly a great deal better than some of the fakes that crowded the Pike at St. Louis and the Midway at Chicago.

This will be the first attempt ever made to get up a bee exhibit on so large a scale at an exposition, and we are, therefore, waiting with interest the result of the experiment.

#### MORE ABOUT MALTED HONEY.

DR. HAMILTON T. MASON has written us further with regard to his malted honey. He says he has no idea of putting up honey for appearance, but rather something for weak run-down people who do not stop to look at the color, nor perhaps the flavor, for that matter. He adds the honey sent us was originally amber, hence not the best. He further states that, by putting in less malt, the flavor is unaffected. He aims, however, to produce a food having both the flavor of the honey and the malt. He is of the opinion that this blend can be introduced through the health stores, and by advertising in the health magazines, in which he is probably correct.

The makers of "health" foods have certainly been very successful the last few years in making money; and if honey can be advertised in the same manner there is "millions in it." If it could be patented, a

great deal of money could be made out of honey, but—

#### THE UNUSUAL APRIL WEATHER.

In our last issue we reported an unusually warm spell of weather during the latter part of March, adding that we felt fearful this would be followed by the other extreme—a cold April. That our fears were not altogether groundless is evidenced by the fact that, since the first of April, we have had cool to cold weather. The bees have had almost no chance to fly; snow and cold rains, with very little sunshine, have continued on throughout the month thus far (April 20).

If this condition is universal in the North it will mean much spring dwindling, and as a result many colonies will be in poor condition when the harvest comes. Even if the nectar supply should be abundant in June and July, the weak stocks will not be strong enough to gather a good crop. But bees have a wonderful recuperative power; and should the weather be ideal from now on, they may make up the lost time.

Comparing this April with that of three or four years ago, the contrast is remarkable. Then we were having swarms at this time. Fruit-bloom, which was then out in all its glory, had made the bees simply wild.

#### THE LATE SPRING, AND PRICES ON HONEY FOR 1907.

THE late spring in many of the Northern States, coupled with an excessive amount of rain in California, and the entire failure of the honey season in Cuba, does not give a prospect of a glut of honey for 1907. The markets, when they open up, should be firm, especially so this year—the first one when the National pure-food law has been in effect. We must not expect, however, that this law is going to work a revolution in prices in one year. It may take the dear public ten years to learn of the existence of such a law. Some food papers even now are telling about manufactured comb honey, when they ought to know, if they know any thing, that if such a product were mechanically possible it would be barred from the markets, especially so as new pure-food laws are being enacted in the various States at a rapid rate.

#### "THE HIT BIRD THAT FLUTTERS."

RECENTLY some of the dealers affected by the proposed New Jersey pure-food law were given a hearing which brought quite an array of druggists, ice-cream makers, and others. One druggist is said to have stated to the reporters that, if he was compelled to state on his labels the ingredients of some of his preparations he would lose \$40,000. The ice-cream dealers vigorously oppose the proposed law because they wish to sell a counterfeit made from gelatine, condensed milk, and starch as ice-cream.

The farmers of New Jersey ought to make themselves heard at once. As a matter of fact, the demand for real cream, real milk,



real jelly, real fruit-juice, and real honey, is growing at a great rate, and this must ultimately redound to the farmers' benefit.

Some of our farm papers are very slow to catch on to this phase of pure-food legislation. The evil of adulteration is far more widespread than has been generally supposed—it is a far greater evil than "watering" stocks or railroad wrecking, as it affects every household in the land.

#### SPECIALTY VS. MIXED HUSBANDRY.

To be or not to be a specialist in bee-keeping is a hard question to decide. The weight of testimony goes to show that bee-keepers are very far from being mere specialists, for a great proportion of them are expert poultry-men, while not a few are skillful all-round farmers. Evidently, a thorough knowledge of bee-keeping does not prevent the average American from acquiring a thorough knowledge of other rural pursuits. It is an open question whether the farmers who are specialists in some one pursuit, as, for example, cotton, sugar-cane, cattle or sheep farming, are as well off financially or otherwise as those who pursue a mixed husbandry.

We note in the South the constant advice is to diversify the crops of the farm, and not rely on one staple. The agriculturist whose pantry is always well filled is the man who raises his own food supplies. In farming, at least, some think Nature seems to abhor specialism. We like to think that the bee-keeper who excels can raise his own fruits and vegetables, his own chickens, milk, etc., and do it as well as anybody else.

#### AN EXTRACT FROM SWEET CLOVER FOR FLAVORING; WHY CATTLE DON'T LIKE IT AT FIRST.

THE pure-food laws may affect the status of sweet clover somewhat, for an extract known as cumarin has been made for some time from the plant and quite extensively sold as vanilla. It is not considered quite as good as vanilla, not being worth more than half that of vanillin, the artificial substitute for real vanilla. It is the cumarin which this clover contains that causes animals to dislike it at first. The hay is better liked, simply because the cumarin has been rendered less rank by drying in the sun. There is nothing injurious about cumarin, being extracted from a vegetable, but there is some chance of vanillin being ruled out, as it comes from a coal-tar source.

Something similar to cumarin is also extracted from tonka beans gathered on the Orinoco River. The latter is not a "bean," but the seed of a fruit resembling the mango or peach. The question naturally arises, "Can cumarin take the place of vanilla, or, rather, vanillin, for it is the latter which now rules the market of the United States?" Merck quotes cumarin (wholesale) at \$4.25 per lb.

There has been a good deal said about sweet clover as a food for farm animals; but no one, apparently, has noted its great value as a fodder plant for sheep and goats.

#### TREE-PLANTING IN OHIO.

At present it looks as though tree-planting would become popular even here in Ohio, where nearly all the land is comparatively high-priced. The following, from the pen of a practical farmer, will give a slight idea of the trend of planting opinion:

Last year I planted 26 acres of my best land to catalpa-trees, and this coming spring I shall plant 125 acres more. I did not commence this large planting of trees as a business until I had satisfied myself by a thorough investigation that I shall make more from the growth of the trees on this land than I could have hoped to make by farming it. This is not poor unprofitable land, but the very best of farming-land; and I am as certain as I can be of any thing that my trees will make me much more than can be produced from the land by ordinary agriculture. Of course, an income like this will have to be waited for—eight, nine, or ten years, possibly; but those who are so situated that they can plant trees and wait for returns will be wonderfully surprised when their harvest comes in.—*H. C. Rogers, Champaign Co., O., in the Ohio Farmer for Feb. 2.*

Remember that the catalpa is ranked among the honey-producers.

The newspapers have announced the fact that the Pennsylvania Railway had decided to secure large tracts of land for the purpose of tree-planting to supply its own wants when lumber will be scarcer than it is now.

#### HONEY AS A PERFECT FOOD AND AS A PREVENTIVE OF FATIGUE.

HONEY is an excellent food in the prevention of fatigue, owing to the fact that, while it builds up the body (or, rather, makes up for the loss of tissue), it does not tax the system. The latter is not called upon to throw off or get rid of a mass of perfectly useless material, for it is undoubtedly true that not  $\frac{1}{10}$  part of honey is actual waste. Not only so, but it is in a state of partial digestion before being eaten, and, in addition, the exquisite flavor of much of our honey induces a very free flow of saliva—a very necessary aid to digestion. It is believed that, after passing to the stomach to become natural glucose by the aid of the usual digestive ferments, it later becomes glycogen through the operation of the liver. In this manner it is converted into heat and work. It is given off by the body in the form of carbonic acid and water.

This is the latest theory of the digestive process as applied to honey.

It differs from sugar in two important particulars—first, it does not require to be "inverted," or converted into glucose—a process which frequently leads to diabetes, or kidney troubles, and it also possesses an aroma and flavor which sugar does not, and which is so necessary to good digestion by inducing the saliva to flow. It contains other valuable ingredients not found in sugar.

#### DOES OUR HONEY GO TO ENGLAND?

Referring to what we had to say in regard to the prices of English honey in former issues a correspondent of the *British Bee Journal* has this to say (in part):

Then our folks are ever ready to boast of the high prices they obtain for their produce. Quite recently GLEANINGS, with a world-wide circulation, was writ-

ing up the high prices obtained by English bee-keepers for their honey; and this tends to whet the endeavors of the bee-keepers abroad to scoop in some of the "almighty dollars" by sending their produce to compete with ours. As regards the consumption of honey, I feel sure a much larger quantity is disposed of than a few years ago, as the growth of the industry must be steadily progressing. The hive-makers of ten years or more ago are still offering hives for sale, and have, no doubt, collectively turned out thousands yearly; and our advertising columns record that sections are imported by the million yearly. There is only one class of honey-producers who can complacently view these advances, and they are the heather-honey men who live "ayont the Tweed." May they have a record output at 2s. to 2s. 6d. per pound (48 to 60 cts.) in the coming summer.—W. WOODLEY.

Beedon, Newbury.

Our readers will remember we said nothing relative to exporting honey to England. On the contrary, we stated our opinion that American consumers were quite as well able to pay good prices as Englishmen, to say the least, and we believe there is very little American honey now exported to the English market. A good deal of the honey that the writer of the note complains of comes from British colonies where the "almighty" dollar is the standard of value—notably in the West Indies and Canada. We maintain that the population of this country, which is about 85,000,000, can consume all the honey we produce and considerably more.

Another fact which prevents us for the present from exporting honey in any quantity is the low price offered by English buyers, who bottle the honey and expect to make a large profit on the transaction—and they do, according to Mr. Woodley's own showing. It is the bottler who is after the dollars—or shillings. We do not covet the English market, but its prices.

#### PRESIDENT ROOSEVELT'S POLICY OF CREATING FOREST RESERVES.

SOME of our Western contemporaries are making severe comments on President Roosevelt's policy of creating great forest reserves, claiming there is very little timber on these lands. The government is probably aware of this, but trees can be planted on them, and that is probably what will be done later on when we get round to it. No other agency could do this better than the federal government, as work of this kind lasts for centuries, and hence cannot be delegated to private enterprise.

No greater calamity could befall this country than to cut down all its forests; but this is precisely what is being done; and without planting on a vast scale we are measurably near the time when there will be no timber available except at prices which would be prohibitive of competition with other nations who manufacture wooden goods.

There is another side to the question; for it is probable, if these forest reserves are kept as great game preserves, the money gain would be greater than the present plan of cutting off the trees and using them as pastures.

So far as we can see, the Rocky Mountain States are anxious to pursue the same suicidal policy which characterized the Central States. We are sure some of the reserves,

if properly planted, would become grand places for bee-keeping, and this ought not to be overlooked in the reckoning-up. Men will have to be engaged to care for the forest, others to cut the timber, others to use the wood in factories; tourists and hunters will be attracted to the locality, and in the end a large population will be maintained.

The people of the East, who have seen the folly of indiscriminate timber-cutting, are willing to vote public money to support the President's policy, and we judge bee-keepers are with him. Bee-men have a double interest in this problem, because they want to see a bee flora created and a supply of timber maintained for all time. We can join hands with the foresters, saw-millers, hunters, tourists, and anglers to prevent the further despoliation of the national domain. Maine is successfully pursuing the policy just recommended, and Ontario is practically doing the same, so also New York. The same criticisms have been leveled at the work in these three sections, but we hear little of it now.

#### DESTRUCTION OF BEES BY SMELTER SMOKE; A SETTLEMENT WITH THE SMELTERS BY WHICH THE SUFFERING BEE-KEEPERS WERE AWARDED \$60,000 DAMAGES.

ON both of our trips through the arid regions of the great West some years ago, studying up the bee question, we observed that those bee-yards that were in the immediate vicinity of the big smelters were seriously damaged. The highly poisonous gases that permeated the atmosphere seemed to kill vegetation, especially all plant life that furnished honey, and at the same time making serious inroads on the lives of the bees themselves. In fact, all vegetation for miles around was badly blighted by the noxious gases. The damage was seriously discussed by bee-keepers, and it was evident at that time that either the smelters would have to move or else the bee-keepers.

As we understood the question, the bee-owners had the right of priority occupation of the territory; and in the early days, before these big works moved into the territory, bee-keeping there was a very lucrative business.

The question has been discussed pro and con through all these years; and sometimes it was thought that the aid of the courts would have to be invoked; but it appears that both sides (and wisely, too, as we think) resorted to a friendly arbitration, with the result as recorded in the heading. While apparently, at least, the alleged sum is a large one, it is a comparatively small part of the damage that has been done.

We are personally acquainted with Mr. E. S. Lovesey, one who has suffered in this way, and we remember him as a man of sterling qualities—certainly not one who would be inclined to misrepresent or exaggerate the actual damage.

He has written an article on the general subject for the *Deseret Farmer*, which we are pleased to publish in full, as it is of more



than usual interest to bee-keepers in the vicinity of those big smelting-works.

It is, no doubt, true that there are other bee-keepers not involved in this particular trouble, but who have likewise been suffering a like damage. Whether this will act as a precedent to other cases remains to be seen.

We do not know what the status is for these other parties, but we should be glad to place before our readers any news bearing on the subject.

After a long and severe struggle of two years, we have finally been successful in securing a settlement by arbitration with the smelters in the Salt Lake Valley. Prior to the advent of the smelters, the Salt Lake Valley was the banner bee and honey county of the State. Ten years ago there were over ten thousand colonies of bees in the county. To-day I believe there are not ten colonies left. At first, when the bees began to die off, the bee-keepers, not being cognizant of the source of their trouble, bought more bees, but these died off faster than the first ones. Many of our bee-keepers, having made a success of the business, and depending upon it for a livelihood, did not like to give it up until absolutely forced to. The writer has lost, all told, over one thousand colonies; and while we have suffered enormous losses, we decided it was a source of wisdom to compromise with the smelter people for the sum of \$15,000 from each of the four smelter companies. Of course, this does not begin to compensate us for our losses; but we started in for a friendly settlement by arbitration, rather than to go into the courts. We think this settlement is better than it would have been to go into the court and secure a judgment, as that is a very poor thing to live on; but the little ready cash that we have received has helped many of our bee-keepers materially, and we realize too that there are two sides to every question.

In the beginning the smelters were welcomed to the valley, and no one anticipated any trouble from their operation. When we take into consideration the unforeseen complication of this long-drawn-out question our bee-keepers are very well satisfied with the final settlement reached.

I am especially grateful for the many words of appreciation received by the bee-keepers for the work I have done in conducting this matter. There have been volumes of documents pass between myself and the smelters in our persistent effort to bring the matter to a successful issue. The smelter people were always courteous and patient; and, while it was a long and tedious affair, it was most pleasant throughout.

With the smelters already located in Salt Lake Valley, we have had experience which ought to have given a lesson so far as the location of smelters is concerned. However, there was actually built in 1906, near the agricultural centers of Weber and Box Elder Counties, another smelter. A protest was sent by the bee-keepers to the company before the smelter was built, and now we feel that, if the bees are destroyed by fumes, a condition most likely to obtain, the bee-keepers of those sections will claim full damage for their losses. The smelters that are to be built in the future should be made in those sections where they will not do damage to the agricultural industry.

#### A PLURALITY OF QUEENS IN A HIVE WITHOUT PERFORATED ZINC OR OTHER DIVISION.

Our readers will remember the article by Mr. E. W. Alexander on the possibility of having a plurality of queens in one brood-nest without using perforated zinc or division-boards, as given on page 473 for April 1. Mr. E. E. Pressler, of Williamsport, Pa., a bee-keeper of considerable note in his State, has for some time been working on the same lines. The writer has been trying to get him to put a few of his ideas in typewriter, and send them on to us for publication, but nothing has come to hand till now.

When the article by Mr. Alexander appeared, it so stirred up our friend that he

could no longer keep his light under a bushel, as will be shown by the communication sent. As the matter is something of more than ordinary interest, we are pleased to place it before our readers right here in the editorial columns.

I consider Mr. Alexander one of the ablest contributors to GLEANINGS, and wish we had more such writers. Many bee-keepers may not consider his practices and doctrines altogether orthodox; but for myself I wish we had more bee-keepers of this class, who are willing to blaze the way to what I consider modern apiculture.

Thus far I have persistently refused to have any thing published over my signature; but the last article of Mr. Alexander's has so stirred me up that I can not refrain from emphasizing the importance of having two or more laying queens in one colony to build up strong colonies preparatory to the expected honey-flow. After having tried all the so-called systems of queen rearing and mating, I have found them all lacking some essential point for my practical use. In experimenting along the lines of queen-mating in full colonies (which I do altogether now) by placing division-boards made of queen-excluding zinc, some solid boards, and queen-excluders made for the purpose between the brood-chamber and the surplus department, and being rushed with work one day, failing to replace these division-boards, etc., after examining a colony, I found on returning, six days later, that four virgin queens, which were placed therein for mating purposes, were all mated and laying, with the excluders and division-boards standing on the outside rear of the hive. I had used these division-boards and excluders with from four to ten queens in a hive, and many times after the virgins were mated—probably not had ready sale—I kept the queens laying in their several compartments for some time; and the bees going through the excluders above, intermingling with all the queens in the hive and filling a second story in a few days, made me "sit up and take notice."

Judging from the article by Mr. Alexander he has gone up the lane of progress, grazing between the second wires of a barbed-wire fence, tasting a little of the golden sweet in the promised land, and no doubt has been scratched by the barbs on the wire fence on many occasions; but, like myself, nothing like adversity is known to him when experimenting along modern scientific lines. I am satisfied there will be many the coming season who will attempt this method and make a failure of it, and say it is not Little-doo-oo or Lermilox, simply because of the prejudice for the teachings of the past.

Were it not for the editorials in GLEANINGS, and footnotes expounding and upholding Mr. Alexander the past year, the majority of his writings would hardly have been accepted; but with this footnote explanation by the editor, he has become authority and a shining light for our industry, for which I am thankful.

Some time last summer a certain doctor from a Western State discovered two laying queens in one hive—mother and daughter. He wrote and had an article in one of the bee papers about it, saying that he was now an old man and had never before seen any thing like it—facetiously wondering at the same time if any one else had ever witnessed such a thing. He seemed to go into ecstasy over this "new discovery." This did not move me one bit, because I had just 73 laying queens in ten thirteen-frame hives at that very moment, no mothers and daughters either.

On several occasions another bee-keeper who carries his name by the same handle (I suppose to suggest authority) wanted to know how a queen-breeder knew which queen produced the best strain of bees for honey-gathering, when of necessity all his colonies were devoted to "modern queen-rearing." This prompted me to say on the floor of a convention that I could mate all my queens in full colonies, and instead of diminishing or having no surplus crop of honey, I could at least double my crop. So could every queen-breeder if he would burn up his baby-nuclei mating-boxes, then thoroughly learn the habits of the bee, and start *modern queen-rearing*, which is as old as time itself. What are those queens worth that are reared and mated by the baby system? They are small, puny, sickly-looking specimens of the real thing—I mean 75 per cent of them, and that percentage should have their heads pinched off.

On next page J. A. Green writes on the same subject.



Bees have wintered very well so far, and there is every prospect of a good season here.

The Colorado legislature passed a good local-option law during its last session. The territory owned by the distillers and brewers is narrowing down.

Honey that has granulated in the comb can be melted without damage to the comb by a careful management of the heat; but it is hardly practical or profitable to attempt it. In the case of honey in sections, there is the further disadvantage that the appearance is injured by the melted honey settling close against the cappings, making watery-looking combs.

It is a very dangerous thing to attempt to winter over colonies that have foul brood, no matter how strong they may appear to be in the fall. Our inspector permitted this in some cases last fall. In buying bees this spring I came across some of these. Four out of five of them stood no chance whatever of living long enough to be cured, but would inevitably die and be robbed out. In fact, I heard of some cases where this had already happened. The trouble is that there is not the usual percentage of young bees among those going into winter quarters, so that the winter loss is heavier. Then when brood-rearing begins in the spring, so many of the larvæ die of disease that the colony has no chance to build up.

The statement on page 473, that if we slowly melt a quantity of solid honey the dextrose and levulose can be separated very readily, the latter running away from the dextrose, which is in the form of finely granulated sugar, doubtless is correct of *some* honey. In fact, I have seen just such honey myself. But with some honey, and I am inclined to think with a thoroughly well-ripened article of any honey, this would be impossible. In both Illinois and Colorado I have produced tons of honey that was too dense and uniform in texture when granulated to permit of any separation of its constituents. When heat was applied, the honey softened or melted uniformly. I do not believe the writer of the paragraph in question ever saw a sample of granulated heartsease, clover, or alfalfa honey that had been thoroughly ripened.

#### TWO LAYING QUEENS IN A COLONY.

If it should prove that E. W. Alexander is correct in his claim that it is practical to keep

two or more laying queens in a hive, its publication will prove to be one of the most important steps that have been taken in bee-keeping in a long time. In corroboration of his position I will say that I once introduced a queen into a colony that already had a good laying queen. I had a queen I intended to supersede. I killed her, and later in the day put a queen into the same hive, as I supposed, introducing by the candy plan. Several days later, in looking at my records I found that I had put the queen into the wrong hive. Examination showed that both queens, the one belonging in the hive and the one I had introduced, were there, both young queens, both apparently laying and on good terms with each other and the workers. The queen was needed in the other hive, so one was removed, and somehow I never experimented any further in that direction.

Contrary to his experience, I have had laying queens kill each other when shut up together, also when in separate cages lying together so that they could sting each other through the wire cloth. I think it very likely that we shall find there is a difference of temper in different strains of bees that will give a variation in results. It is well known that some strains of bees can be readily united without trouble, while others are almost sure to fight.

#### SPRAYING FRUIT-TREES WHILE IN BLOOM.

Several of the States have laws prohibiting the spraying of fruit-trees with poison while they are in blossom. Colorado is one of these. Aside from this, we have been congratulating ourselves that up-to-date fruit-growers had come to the belief that spraying when trees are in bloom is contrary to their own interests. But a new development has arisen here in Colorado. The Grand Valley, on the western slope of the Rockies, is largely devoted to fruit-raising, apples being one of the main crops. Probably there is no district where more interest is taken in scientific horticulture or where better preparation is made for it. In the matter of spraying, hundreds of power-spraying outfits are in use, and during the last season the fruit-growers of Mesa Co. paid out over \$36,000 for spraying-materials alone, many carloads of poison being applied. It will be seen that the spraying question is an important one to the fruit-grower, and it would be well for us to look at the question from his side, even if it is not altogether agreeable.

In the first place, we must remember that the time for proper spraying is very short. To be effective it must be done while the calyx is open in order to fill the calyx cup with poison. The closing of the calyx varies with different varieties; but in from five to seven days after the petals have fallen it has closed and the time for effective spraying has passed.

If you will examine a bunch of apple-blossoms you will find that there are usually from five to eight blossoms in a bunch, but that this bunch seldom produces over one or



two apples. These are produced from the center blossoms, which open sooner, drop their petals sooner, and close their calyces sooner than the rest of the blossoms. From the standpoint of the fruit-grower, these central blossoms are the only ones to be considered so far as his interests are concerned. To quote from the report of the field entomologist, carrying on a branch of the State Experiment Station here, "The center blossoms are invariably the first to open their petals and first to drop them. They are first to close their calyces, and most likely to set fruit which will remain without dropping from the tree. It is, therefore, evident that this first spraying should be done with these blossoms in mind." You will see that there is a powerful incentive for the man with a large amount of spraying to do to get at it before the outside blossoms have fallen. This, undoubtedly, will be bad for the bees. But with the large amount the fruit-grower has at stake, can we altogether blame him?

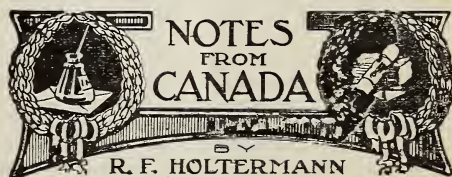
#### DEEP VS. SHALLOW BROOD-CHAMBERS.

There are one or two points in Mr. Dadant's article on page 485 that I want to reply to. In the first place he calls attention to the fact that the Heddon hive has not made the progress that might have been expected of it. It is true that the Heddon hive has not become greatly popular. I will admit that it may even have lost some of the popularity it once enjoyed. But there are some good reasons for that aside from the fact that it is a divisible-brood-chamber hive. While I think great credit is due Mr. Heddon for his introduction of the divisible brood-chamber, I was never very well satisfied with his hive after it had been in use for some time. The frames were too hard to handle when manipulation became necessary, and there were some other defects of construction which soon led me to discard the hive. I once had about fifty of them. I have just one now. But some slight changes in construction, mainly the adoption of a closed-end hanging frame, made a shallow hive that suited me much better, and I have several hundred of these in use now. Probably there are others who gave up the Heddon hive because they recognized its faults and did not have the opportunity I had to make a hive that avoided them.

The point that only two per cent of the foundation sold by the Dadant factory is for shallow hives is not as important as it would appear, for it happens that a large proportion of those who use shallow hives—all, in fact, with whose methods I am acquainted—are comb-honey producers, following the modern plan of hiving all swarms in contracted brood-chambers with only narrow starters of foundation in the frames. Naturally this consumes very little brood foundation. These narrow strips, too, can be cut just as easily from the standard width of sheet as from a special size. That is exactly what I shall do in preparing my hives this season. In fact, all the full sheets I want

can be cut from the standard size, and the remnants used for starters in the frames on which swarms are hived. In this way there would be no indication to the foundation-maker of the size of frame in which it was to be used.

Please remember that the users of shallow hives are not denied the privilege of handling frames if they want to. They are not obliged to double the size of the hive or add a whole story of brood or honey unless they want to. They can make such additions just about as easily, and even more gradually, by single frames than the users of the large frames. Mr. Dadant does not relish the idea of hunting a queen by shaking the whole swarm out. Of course, that is impractical with his hive; but if he could do it with less time and labor than by overhauling the frames (and I can easily prove that this is the case), is there any good reason why he should not do it?



On page 485 C. P. Dadant, while favoring *deep* brood-chambers, admits that "shallow hives are more desirable for migratory beekeeping." The one who swings this pen fails to see the advantage to be derived from having to fasten together four pieces where there are only three with a deep chamber, or even fastening together six or eight where formerly there were only four or six.

#### SIMPLE FRAMES, ETC.

In the same article he quotes Editor Hutchinson as being in favor of simplicity in hive-construction—plain simple frames without projections of staples, stating that these "fixings that are put upon frames and hives are a needless expense and bring no recompense."

Can it be that Mr. Hutchinson has never tried staple-spaced frames—that is, frames separated from each other by staples? If he has, I can not see why he should pronounce such spacing a needless expense. I have tried both ways, and I would no more go back to unspaced frames than an intelligent woman would leave a first-class washing-machine and go back to a plain tub. The reason for my decision is that staples are not costly; they are not in one's way when uncapping, and, when returning them to the hive, I can space them accurately, *collectively*, by showing them together in a body—a *very important matter*, and many times multiplied in robbing time. For five years we have never seen the day when, extracting in robbing time, we had to quit extracting in time of robbing. The same largely holds good

when manipulating the brood-chamber. Try it, friend Hutchinson, and you will have less trouble in robbing time.

#### CLIPPING QUEENS.

On Wednesday, Thursday, and Friday, March 27—29, we examined colonies for queens, brood, and honey, clipping queens—something unusual for us in March. If bee-keepers would thoroughly rub propolis over their fingers before touching a queen, no evil results would occur from foreign odors. I catch a queen in the right hand, then take her between the thumb and finger of my left, holding her by the upper and lower side of the thorax; then clip her with anything from a fine pair of scissors to a sheep-shears, so long as they will cut clean and not pull the wings. Cut the wings on both sides evenly. We have clipped many a queen with sheep-shears.

#### EXTRACTORS.

Last week I visited a progressive and intelligent bee-keeper, who was for years president of our county bee-keepers' association—Mr. Chris. Edmanson. He has a large reversible honey-extractor, and in a reminiscent way said, "When I think of the time I used a smaller machine, and particularly a non-reversible, it makes me smile and shake my head. Nothing could induce me to go back to that way of extracting." This is my experience, and the experience of many others. Give me a machine of less capacity as a gift, and it would not pay me to use it. The same way with the inside strainer as described in GLEANINGS last year. One who has once used it would not do without it.

#### BASSWOOD POLLEN.

Self-fertilization in blossoms is "the fertilization of a flower by pollen from the same flower and without outer aid."—WEBSTER. The male and female blossoms must at least be in the blossom, and both mature at the same time. If a basswood blossom could produce fruit without pollen, the *principle* (that is the word I used) of reproduction by seed without males would have to exist in plants. It is needless to say I do not think such is the case, and basswood *must* produce pollen, even if it cannot be detected by the naked eye—see page 163.

#### FLOWERS THAT GIVE LIGHT AND HEAT.

J. C. Beard, in *Sunday Magazine*, writes:

Not only do growing plants emit light, but, strange as it may appear, they send out heat as well. LAMARK more than a hundred years ago discovered that the European arum "in opening grows hot, as if about to burn." By the application of an instrument of extreme sensibility used to determine slight differences of temperature, the thermopile, the warmth generated in any cluster of blossoms is made perceptible.

The development of heat in tropical plants is most marked where a multitude of flowers are massed together under a common covering hood or spathe. The temperature in this case appreciably increases in the afternoon like a paroxysm of fever and passes away as evening approaches; the greatest heat always comes during the shedding of the pollen.

It may be added that the best time to witness flower-

fire is in July or August, just after sunset, when the air is dry and clear. If there is a dense atmosphere, or it is after a rainy day, nothing can be seen. It is much better to have a whole bed, or cluster of the flowers, than a single specimen, under observation.

How much there is that we do not yet know about plant life!

#### CONDITION OF BEES.

Reports generally indicate that bees have wintered a little below the average. Those fed sugar syrup in the fall are all right; others show a more than usual amount of dysentery; the outlook at present writing, however, is good in every way.

#### FLYING APIARIES.

The *American Magazine* for April contains nine pages, with illustrations, of the Wright Bros. flying-machine. This is the machine described by Mr. A. I. Root in GLEANINGS last year, and Mr. Root's name is mentioned in the article. The Wright Bros. have traveled through the air at a speed of 50 miles an hour. In the no distant future I believe we shall move out-apiaries on these flying-machines—perhaps start out in the south in spring and follow the bloom as it opens up north. Those will surely be *strenuous times*.

#### THIN OR EXTRA-THIN SECTION FOUNDATION.

J. A. Green, page 468, rather opposes the editor as to the advisability of using thin instead of extra-thin section foundation. I fancy the difficulty in the past has been from using foundation thicker than the *thin* grade. I have known bee keepers over here to put brood foundation in their sections—not very often, of course. With the extra-thin foundation, unless the bees draw it out and build walls on it at once, I have found them more liable to gnaw holes in it and eat the wall down, enabling them to build drone-cells. Another thing, do the bees not take hold of the heavier grade a little more readily? I think so.

#### POLLEN-CLOGGED COMBS.

In the report of the British Bee-keepers' Association conversation, *British Bee Journal*, page 431, 1906, Mr. Arthur Teach said, with regard to pollen-clogged combs, he would like to ask if any gentleman present had tried the Canadian system of cutting away the comb to the base or mid-rib, by which means all the pollen clog was removed.

It is news to me that this is a Canadian system. Mr. Paul's method, on page 431, being a report of the same convention, appears to me a much better method. He said, "Soak them in water for a little while, and then turn the garden hose on them." He simply held the comb in front of the hose, when the pollen was readily washed out.

Where there is no system of waterworks the combs may be placed in a damp cellar. In warm weather the pollen soon ferments and swells. The least resistance is toward the open cell-mouth. When these combs are then brought out to dry, the pollen lumps dry.



and contract, when the bees will remove them. However, unless the bee-keeper is very scarce of combs, and comb foundation not convenient, the best way to treat such combs is probably to cut them out of the frame and melt them. In closing let me say that if there were no swarming, and the stock always had a laying queen, there would be fewer pollen-clogged combs.



#### WHAT WE KNOW.

Science, which claims so large a share of the attention of all the intelligent people of to-day, and with good reason, has to do with facts, or, we might say, with truth. The scientist has for his work the determination of truth. We have sought out the truths of electricity, and now we are able, by means of a small wire, to conduct this intangible fluid so that it moves great carloads of people. Scientific truth is gained by experiments. These experiments must be many times repeated or we may draw wrong conclusions, and claim for truth what is not truth at all. Old observers in astronomy saw the sun, as they thought, go repeatedly around the earth and gave this forth as a truth. We now know that they were wrong. They were deceived by appearances. Evolution, which to-day is accepted by all intelligent students of the subject, teaches that God has formed things, as we see them, by the slow process of development, through laws which he established and maintains, and not by a fiat. This involves so much that a complete demonstration is quite impossible, but it is firmly believed, as it explains all things that we see and know so well, that to doubt is not possible. In like manner we have determined many things in the science of bee-keeping. Is it not well to take note of these that we may not be thrashing old straw?

#### MATING QUEENS IN CONFINEMENT.

This is a thing that is, like Banquo's ghost, ever coming up for attention. It seems so important that people can not give it up. I and several others tried this so thoroughly years ago, and in so many ways, that I feel sure it will never be done, or at least will never be practical. I am sure that we may decide that matter settled. It is probable that, if we could succeed, it would not be desirable. The matter of flight would not have prevailed, except that it is wisest and best. It brings danger, and must have more to recommend it or it would not be as it is. It is probable that the exercise is called for to make the sexual act complete; and so if we could succeed in mating in quiet, we would

doubtless find that we had queens that were worthless.

#### PLANTING FOR HONEY.

Another thing that we have determined once for all is that it will not pay to plant exclusively for honey. Plants like clover and alfalfa, that will pay for other purposes than honey, will pay well. It may and often will pay well to furnish seed to a farmer who lives near our apiary, if he will grow alsike clover, alfalfa, or any other useful plant that has a double use in that it also furnishes honey; it will also pay well to secure the planting of valuable honey-trees along the highway, such as linden, tulip, acacia, catalpa, and eucalyptus, when they are among the best of trees for roadside adornment. It is wise to plant sweet clover, motherwort, and other good honey-plants in all waste places near the apiary. It is better to have such space occupied by plants that have value, and not grow weeds that are a sore disfigurement, and, besides, furnish seeds to scatter to become a nuisance to our neighbor as well. I once heard Mr. Harbison, the distinguished bee-keeper, say that he had planted the wild sage in waste places to great advantage in our State; but to grow any plant on valuable land that has no use other than the nectar it yields is a mistake. This has been demonstrated beyond question.

#### STIMULATIVE FEEDING.

To feed sparingly in the spring to stimulate to more rapid breeding is wise, as I proved to a certainty many years ago. If one plans wisely this is quite inexpensive, and it will often pay a large per cent on its cost. I am glad to learn that many of our best bee-keepers practice this now with unfailing regularity. I am sure that it will be practiced more and more as people learn the best ways. It takes time to bring even the best plans and methods into general use.

#### CLIPPING QUEENS' WINGS.

I early learned that this is wise and always pays. I remember that one time an article I wrote in advocacy of this practice was stoutly criticised and condemned by one of our ablest men. He contended that it would destroy the beauty of the queen, and actually injure her. I am sure that to-day it would be hard to convince any of our best bee-keepers that this practice is not safe and valuable.

#### QUEEN-EXCLUDERS.

I have proved to my own satisfaction that we can not afford to do without these valuable aids to our success. I would not do without them either in working for comb honey or for extracted. It may be that some people will be content to do without them; but I am sure that they have come to stay, and that more and more they will be used by our best bee-keepers. We can surely keep the queen solely to the brood-chamber only by the use of the zinc excluders.

## SEPARATORS.

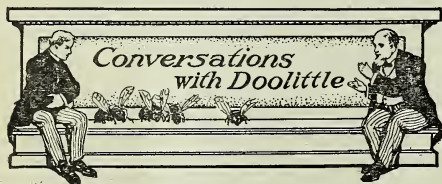
Here again we have a demonstration. I feel sure that, in working for comb honey, the best success will come only in the use of separators. I do not care much whether we use tin or wood, as each has its advantages; but I am quite sure that one must be used if we would reach the best success.

## WHEN TO EXTRACT.

Here again I feel sure that we can speak with positiveness. We must never extract unripe or thin honey. I once thought otherwise, but I am sure now that I was wrong, and am sure that one who does otherwise runs a hazardous risk.

## GENEROUS RAINS.

In all my sojourn in Claremont, now for more than 13 years, I have never known such bountiful rains as have come to us this present winter. Our average is 15 inches, while we now have had 22.22 inches and we still have the best part of the winter to come. This insures great crops, and is almost as certain to give a surprising honey crop. There is one thing that gives California pre-eminence as a bee region. We have abundant bloom all winter, and the bees are lively all through February and March on the flowers of acacia and the eucalypts. Thus we have stimulation all winter. Of course, this also works to keep the bees healthy. We never have dysentery in this place so far as I have observed. The bright bloom of the acacias the past month, and the merry hum of the bees, have made it delightful to stroll about in the bright sunshine.



## LITTLE SWARMING AFTER POOR WINTERING.

"Mr. Doolittle?"

"Yes, Mr. Brown."

"Do you think that bees swarm less the first summer after they have wintered poorly during the winter?"

"I hardly think that, taking the average of the poor winters, together with the average of the good winters, little difference will be observed as to swarming of bees during the average summers following. But what made Brown ask that question?"

"I was talking with an old bee-keeper a few days ago, and he said it seemed to him, that bees never swarmed as much after a heavy loss of bees during the winter as they did the next summer after all had come through the winter in good shape; and he cited me to the summer of 1883, after that ex-

ceptional loss of bees which he said occurred during the winter of 1882."

"I well remember the winter of 1882, during which nearly if not quite three-fourths of all the bees in the United States were swept out of existence. But I was not aware that the next summer was one of few swarms."

"He said that he lost four-fifths of his bees during that winter, and that the next summer he did not have swarms enough to stock the combs from which the bees had died."

"Ah! I see why he thought the bees swarmed very little. He wished to save those combs, and so it seemed a small yield of swarms because he could not save the combs. But if he had swarms enough to use half of his combs he would have had a greater amount of swarming than usual, for an increase of two colonies from each old one in the spring is considered a large increase for an average."

"That is so. I did not stop to analyze the matter after that fashion."

"My loss that year was 75 colonies out of 90, and the 15 remaining did not have bees enough in them to make three fairly good colonies on the first day of May. These 90 were left out during the winter, but I had 55 in the cellar, 53 of which came out in good condition, and my increase was more than enough to stock all the combs from which the bees died. But his locality might have given different results from what mine did."

"What do you mean by that? If you had a good year for swarming, would not the same be true of your whole State?"

"No, by no means."

"Why not?"

"For the reason that the yield of honey may not be the same throughout the whole State."

"Would that make any great difference?"

"All the difference in the world. With a yield so poor that the bees nearly starve during June and July, no swarms issue; and when the honey harvest begins early, and continues right along without interruption, very few swarms issue, as a rule; but with a season where just enough honey is obtained to carry forward profuse brood-rearing the swarming mania is liable to break out, when swarming is liable to be kept up till the bee-keeper gets tired and sick of the matter."

"This is something I had not thought of before."

"To show you: In 1877 we had a continuous good yield throughout the whole season—so much so that my colonies averaged 166 pounds of section honey per colony, and I had very little swarming, with colonies all strong in the spring, while another year, with a light flow of honey, 49 colonies of only moderate strength in the spring gave me 348 swarms, with less than an average crop of comb honey. At such times as this last, many colonies not strong enough to work in the sections will swarm and keep at it till the apiarist's patience is nearly exhausted."

"But is there no way of stopping such excessive swarming?"

"Yes, there is now: but in those early years



we were not so far advanced as now. If you wish to allow natural swarming, and desire only one swarm from each good colony, just wait eight days after the swarm issues about cutting queen-cells, at which time the first young queen will have emerged from her cell, as a rule, in the parent colony, when you will cut or destroy *every* queen-cell from the combs and have a sure thing on them, as all after-swarms come from a plurality of queens."

"How shall I know that a queen has emerged?"

"By finding one of the cells open at the end, or by hearing the young queen that is at liberty piping, as she generally is doing by the forenoon of the eighth day after the prime swarm issued."

"I see. But what about the weaker colonies which will be about in swarming condition right in the midst of the honey-flow?"

"These can be kept from swarming by the shook-swarming plan."

"But suppose I do not wish to use that plan."

"All swarming can be stopped by caging the queens in these colonies five or six days before your expected honey-flow, and, ten days later, cutting every queen-cell off the combs, when, instead of the solid stopper you have so far had in the cage containing the queen, you are to put one which has a  $\frac{3}{4}$  hole in it, this hole having about one inch of queen-candy in it. It will take the bees about two days to eat this candy out, thereby liberating the queen, at which time all desire to swarm will have passed away; and with the liberation of the queen comes a desire for both brood and stores, which will cause a tremendous rush of honey to the sections, if there is any to be had in the fields."

"Will the bees work always the same with the same environments?"

"Yes."

"But this old bee-keeper with whom I was talking told me that bees do not work any two years alike."

"Undoubtedly he was right in this matter."

"Well, how do you reconcile this with your statement that they will always work the same with the same environments?"

"I have been trying for nearly forty years to find the *same environments* carried out a second time, with an entire failure to do so, when we come to all of the *minutiae* in the matter. I have said hundreds of times that bees act differently in different seasons, for the reason that no two seasons are exactly alike."

"How is that? I had supposed that I had seen several seasons almost identical."

"Two seasons may be *approximately* alike, but never *exactly* alike. I used to wish that each season might be like the preceding, then I could secure a crop in just such a way every time, machinery like; and of late years I have not wished that way."

"How is that?"

"Had it been thus, Doolittle's bee fever would have run its course long ago. But as

it is, each season adds new thoughts, new complications, new zest, new energies, new determinations, etc., till the one great *whole* gives an indescribable pleasure to bee-keeping not found in any in other pursuit. And this pleasure can be grasped only by the one who is not turned aside by trifles. Over the door of apiculture stands written in letters of fire, *lazy and shiftless persons need not apply*; and if they do apply they are always like the seed of the scripture, which was sown in stony places. See Matthew 13:5, 6, 20, 21."

"I'll go home and read up the matter. I am afraid you are a little hard on me."

"I guess you will agree after reading."

### Gleanings from Foreign Fields.

BY W. K. MORRISON.

According to a report in the Alsace-Lorraine *Bienen Zuechter* the local bee-keepers' societies in Lorraine have formed a federation for the better protection of their interests. One of the most important duties of the federation is the fixing of the prices at which bee-keepers may sell their honey. It is not generally realized that in Europe the price of honey is fixed by the local bee-keepers' society. Another duty is the popularization of honey as an article of food, also the collection of accurate statistics of the honey crop, the formation of a bee-keepers' library, and the improvement of the local bee flora in various ways. Some societies publish their own bee-paper. The federation of Lorraine will analyze a member's honey for \$1.25. The local bee-keepers' society in Alsace has a library of 900 volumes which are loaned to members. This is the right kind of coöperation, especially that which has to do with fixing prices.

Mr. Albert Gale, in the *Agricultural Gazette*, of New South Wales, contributes a very interesting article on the bee industry in that state for the past ten years. He states that, in 1897, the number of hives was 41,900, of which 9343 were unproductive. The 32,557 productive hives gave 1,378,039 lbs. of honey, with an average of 42.3 per hive. In 1899 the number of hives was 51,681, with a yield of honey nearly 3,000,000 lbs. From that time the number of bee-hives in use has decreased considerably, though the yield has increased by 8 pounds per hive per annum. In 1897 the yield of beeswax was 31,842 lbs., and ten years later the yield was 39,620—an increase of 7778 lbs.

He states the average wholesale price of honey in the local market to be 5 cents per lb., while beeswax fluctuates between 24½ and 27 cents.

He gives it as his opinion it will take some time for New South Wales to become a honey country, as the tendency is to cut down

the honey-bearing trees in a reckless manner, and the crops grown are not equal to the original flora. He states that the habit of poisoning rabbits interferes seriously with bee-keeping in some localities, as the bees eat the poison set out for the bunnies. It may be that some of the bee-keepers may be able to turn themselves into rabbit-catchers, at which they can earn 15 to 20 dollars a week. The canned and frozen rabbits are exported to the value of \$10,000,000, and Australia could spare three or four times that amount.

At this distance it seems to us as though the chief want of all the Australian colonies were a greater population—at least 10,000,000 or 20,000,000 more people—to consume the superabundance and overtake Dame Nature in her prodigality. Pity that some of the overcrowded, poorly fed, and starving out-of-work people of London could not be deported to that land of milk and honey.

#### BEE-KEEPERS' TABLE OF FACTS.

The following is translated from the French of *L'Abeille* (Belgium), but appeared first in the *Bienen-Zeitung* of Luxembourg:

1. Duration of incubation—workers, 20 to 21 days (3 days in the form of an egg, 6 days as a larva, 11½ days in the chrysalis state). Drone, period of 24 days in the cell (3 days in the egg, larva 6 days, and 16 days as a chrysalis). Queen 15 to 16 days (egg state, 3 days; larva, 5 days, and as a chrysalis 7 to 8 days).

2. The analysis of nectar (by von Planta, Ph. D.): cane sugar, 75 per cent; invert sugar, 12 per cent; cane sugar, 12 per cent; ash, etc., 3 per cent.

3. Analysis of honey (by Koenig). Water, 20 to 6 per cent; invert sugar, 72 per cent; cane sugar, 1 to 7 per cent; ash, ¼ per cent, and a small amount of gum, phosphorus, and various acids.

4. Analysis of sugar—water, 15 per cent; cane sugar, 99 per cent; ash, 1 per cent.

5. Pollen of the wild rose—water, 5 per cent; albumen, 30 per cent; carbo-hydrates, 60 per cent; starch, 5 per cent; cane sugar, 15 per cent; also various matters, acids, and coloring matter.

6. The pap supplied to the young contains, for the queen, 69 per cent water, and 30 per cent nourishing material; for the drone and worker, 72 per cent water and 28 per cent nourishing material.

Composition of the pap fed to queens, drones, and workers:

| 1. For queens<br>(for whole<br>period). | 2. For drones.   |                   | 3. For workers.  |                   |
|-----------------------------------------|------------------|-------------------|------------------|-------------------|
|                                         | First<br>4 days. | After<br>4th day. | First<br>4 days. | After<br>4th day. |
| Albumen, 45%                            | 56%              | 32%               | 53%              | 28%               |
| Fat, 14 "                               | 12 "             | 5 "               | 8 "              | 4 "               |
| Sugar, 20 "                             | 10 "             | 38 "              | 18 "             | 45 "              |

7. The cells of the queens receive 14 times as much pap as a drone-cell, and 90 times as much as a worker.

8. The amount of honey consumed in wintering is as follows: November, 1 to 2 lbs.; December, 1 to 2 lbs.; January, 2 lbs.; February, 3 lbs.; March, 5 lbs.; April, 6 or 7 lbs.

9. The total amount required by a normal colony for wintering, 12 to 16 lbs. of honey; of sugar, 6 to 10 lbs. will be required. (This, evidently, refers to bees in house or cellar—W. K. M.)

10. Artificial feed in the fall is composed of one quart of water to 3 and 3¼ lbs. of sugar.

11. Stimulative feed, ½ lbs. of honey, 1½ lbs. of sugar, and 4½ quarts of water. (This is to imitate nectar.—W. K. M.)

12. Medium for lubricating foundation-machines, one part honey, 2 parts water, 3 parts alcohol. Something cheaper for the same purpose, 5 grams of green soap in one quart of boiling water.

13. Weight of swarms. One pound contains in the neighborhood of 4500 bees; but in a swarm, 4000 bees make a pound, so that a swarm weighing 3 lbs. has 12,000 bees. A colony of bees at its maximum development contains 30,000 to 60,000 bees of all kinds, and may contain 40,000 to 70,000 cells occupied with eggs and brood.



## ORGANIZING FOR BETTER PRICES ON HONEY.

The Present Unsatisfactory Method of Producers Working Against Each Other in the Disposal of Their Crops.

BY E. W. ALEXANDER.

The weakest link in the whole complicated chain of modern bee-keeping at the present time is a lack of practical organization. I will admit that we have national, State, and county organizations, and we hold many conventions; but when it comes to the most vital part of our business, that of disposing of our honey, then each producer is not only a competitor against all others, but, according to his circumstances, will sell at almost any price he may be offered, thereby injuring the sale of other producers far more than ten times the amount he produces would if we were organized and sold at one price. This spoils the market, and the speculators take advantage of it and tell us and show us how cheap they can buy our honey, using the price and name of every party that has sold cheap, as a lever to bear down the price and enable them to buy our honey as they have many other lots.

It makes but little difference whether we count our colonies by the dozen or by the hundred, if, at the close of the summer, we sell our honey at cost. Then we are making no money from our bees, and there is something wrong. I know that, to organize for the purpose of securing better prices, would be a rather hard thing to accomplish. Still, I think something might be done to improve this part of our business. I have never known a season during the past 50 years of my bee-keeping life, when honey was sold at such a variety of prices, from ocean to ocean, as it has been during the summer and fall of 1906. Speculators have been scouring the country trying to engage honey at low prices. Many parties that had debts to pay sold at prices they would not care to have made public, while some, fearing that they would have their crop left on their hands, have also sold cheap. We see manufacturers, mechanics, and merchants all over the country organizing for self-protection, and it does seem to me that we as honey-producers might do a little in this line that would be a help to all. I am well aware that, when a man has debts crowding him he is in rather poor condition to argue with a speculator as to the price of his honey, which each party knows must soon be sold; but, fortunately, these are exceptional cases.



There is no doubt in my mind but that, if we could hold together as a company, we might secure one or two cents per lb. more than many do, and still sell at a reasonable price. This would mean thousands of dollars to those who sell cheap, and in doing so they spoil the market price for others. We, as producers, are too indifferent to this part of our business, and it is certainly high time that we awoke to the importance of this subject. If some of the valuable time that is usually spent over minor matters at our conventions could be spent on this subject it would be much better for us all. Now that the wintering problem is quite well solved, I know of nothing connected with bee-keeping of so much importance as that of organizing for the purpose of securing a more uniform price for our honey. So long as we continue to sell as we have done in the past for at almost any price that is offered, we are doing an injustice, not only to ourselves, but to all other producers. Like the drifting derelicts at sea, which cause loss and trouble wherever they go, so we, in disposing of our honey, sell for this and that price until we have spoiled the market and caused trouble to come to those who otherwise would be able to sell at a fair price.

For a long time I have been in hopes that this subject would receive special attention; but we don't seem to have any man who has the natural ability to organize us on this particular line. I have never taken any interest in organizing for the purpose of paying each other's lawsuits, for I never had a lawsuit in my life; neither do I take any interest in organizing for the purpose of getting supplies cheap, for I think the supply-dealer should have a fair profit on his business, especially the men who are spending both time and money in testing new methods, and are working with us to advance modern bee-keeping.

Some may think me inconsistent in advising organization in selling our honey, and discouraging organization in buying supplies. In regard to this I discourage it only so far as it has an injurious effect on the business of those that are continually helping us; and then when we take into consideration how much valuable information we are monthly receiving from our bee journals, some of them publishing information that I know from experience costs them hundreds of dollars annually, which they give us for the small sum of \$1.00 a year, I for one can not feel that it is right to join in a movement to cut them down on their prices, even though I may gain a small amount a year on the supplies I use.

I hope that, before another summer's surplus is ready for market, some man with a natural ability to organize will take hold of this subject and bring order out of chaos, so that we may be a mutual benefit to each other; then when this is done we can let the subject rest.

Delanson, N. Y.

[We regret that bee-keepers all over the country have not recognized that there would

be a decided advantage in coöperative selling of honey. But no successful attempts have thus far been made except in Colorado and California, and in one or two small sections of a couple of States. The Colorado organization has been quite unique in the nature of the work it has accomplished; but this result is due very largely to the fact that it has an honest, efficient business man to manage the enterprise. If there could be a national organization along the same lines, and if bee-keepers would have confidence enough in it to stand by it, very much better prices might be secured. But when one or two jump the fence, and sell direct, it greatly handicaps all organized effort.—ED.]

## BEE-KEEPING IN COLORADO.

A Report from M. A. Gill.

BY DR. O. EWERS.

The development of bee culture along certain evolutionary lines has existed until the culture and the production of honey have become extensive here in Colorado. Bee culturists have advanced along this line, studying the bee scientifically, and applying the benefits derived therefrom, until the business has been crowned with success. The business has a fascination for those who invest and labor along that line, from the fact that they are producing one of the most healthful foods, and from the fact that the business is remunerative. Much sunshine and the mildness of the climate, no doubt, contribute largely to the success in this line of business here in Colorado:

The following is a report of Millard A. Gill, of Longmont, for 1906.

"I had under my supervision 1000 colonies of bees, situated in several different localities in the surrounding country, or divided into several yards. Myself and wife did most of the work in attending to these bees. The work was laborious but healthful, being in the open air and sunshine, which made it pleasant.

"I drove about 100 miles per week attending to them. The roads were comparatively level, mostly dry, and but little mud. Honey in this locality is made from alfalfa and sweet clover, except what the bees obtain from fruit-bloom and various desert plants in the spring of the year.

"I sold this year, 2400 twenty-four pound shipping-cases at, for No. 1, \$2.70 per case; for No. 2, \$2.35 per case. Sum total, \$6100. The probable expense of supplies and shipping was \$1000. The year was not considered the best, but was fair."

Bees are in good condition for the beginning of winter. Longmont alone produced eight carloads of honey this year. Some of my best colonies produced \$20 worth of honey each this year. Colorado produced 42 carloads of honey in 1906. Bees winter outdoors here, and do not have to be housed.

Longmont, Col.

## SUMAC.

## The Plant and Its Honey.

BY ALLEN LATHAM.

In New England the honey-season shuts down July 1st till the buckwheat or the fall flowers start it up, unless the bee-keeper lives in a locality where sumac abounds. Where this plant fills every waste corner, and is scattered over the hillside pastures, as is the case throughout much of Connecticut, there the bee-keeper, if he knows his business, is planning about July 1st for his chief honey-flow, looking for it to open the second week of July. Where the sumac is not abundant, however, no dependence can be put on it, and surprise is sure to come upon the novice to go some July day to his apiary and find the bees in a state of highest activity, and his hives rapidly filling with honey. He is apt to gaze somewhat awestruck to see the bees hurrying in with the yellow-dusted abdomens distended with nectar—nectar at a season when he had given up hope of more honey for weeks to come. Though the flow is likely to last but three or four days, for this bee-keeper, who lives where there is little sumac, the supers are sometimes crowded full in that short time.

It was not till three years ago that I became acquainted with this plant, though I had for years been acquainted with the sudden July flow that blessed Massachusetts occasionally. Upon more than one occasion during a hot wave in July I had tried to trace the nectar to its source, and for some years suspected it to come from chestnut-bloom. The smell about the hives greatly resembled the smell about a chestnut-tree in bloom, and I called the honey chestnut honey till I was down on Cape Cod one July and there saw the flow going on in a region where the nearest chestnut-tree was twenty miles away. I had also ascribed the honey to a certain composite flower common in certain pastures during June and July, though I could never see a bee on that plant. Finally my suspicions fell on the sumac, and I now know beyond the shadow of a doubt that this plant is the source of our splendid July honey-flow.

It is not strange that this plant should have escaped my notice, nor that its flowers attract little attention. The bloom comes during the heat of July when the people keep out of the hot fields; and as the flowers have no bright color and no fragrance, though the clusters have a beautiful grace, they seldom find a place in bouquets.

We have at least four sumacs in New England, besides other members of the *Casheu* family, but only one of them, *Rhus glabra*, is of much value as a honey-plant. *Rhus copallina* sometimes yields, but is unreliable; yet when it does yield, following as it does right after *glabra*, it serves to help finish off the supers of sections.

*Rhus glabra*, the plant pictured in the photographs which accompany this article, is a shrub varying in height from one to ten

or more feet according to age and fertility of soil. Its shoots, straight and rod-like while young, by their irregular branching make the older plants angular and straggling. The wood is brittle, abounding in central pith, furnishing the small boy with material of which to make his pop-guns. The leaves are compound, odd-pinnate, with leaflets numbering from 11 to 31, the most common number being nineteen. The leaflets are a soft green while the stalk is often reddish, and with this coloring, also because the new growth is red, the growing plant is more attractive than the flowering plant.

The flowers are in terminal panicles, which in full bloom are often large enough to fill a peck measure. The buds appear in early June, and develop rather slowly till the heat of July causes them to mature rapidly. The individual buds do not open all at one time, but only scatteringly over the panicle. This fact, together with the fact that the bushes do not reach the blooming period all on the same day, serves to prolong the season to about three weeks. This long season is of service only in localities where the sumac abounds. In Massachusetts, for instance, the flow from sumac, if it comes at all, usually lasts but three or four days.

The plant flourishes on rocky hillsides, yielding poorly on sandy and gravelly soils. Much of the surface of Connecticut is covered with glacial moraines, land with a rocky subsoil, and farms bounded with stone walls. In a word, where farmers can build their boundary fences with stones, there will you find the sumac in profusion, and there will one find a good honey-region.

A peculiarity of this plant is that sunshine is necessary to develop the nectaries. During cloudy, foggy, or cool weather the flowers, even though abundant, will not keep the bees busy. But let the bloom have three hours of hot morning sunshine, and the nectaries will yield throughout the rest of the day. Thus it is that the most profuse flows come during the "hot waves" of July. While the people are sweltering in New York and other cities, the bee-keepers of Connecticut are smiling broadly with satisfaction as they see the incoming honey crowding the capacity of their hives. The cool spell, welcomed by the suffering city dwellers, takes the smile right off the face of the bee-keeper, as he knows full well that another year must roll around before he again enjoys such pleasure as has been his of late.

The sumac-bloom is made up of a numerous branched panicle with countless tiny flowers, almost green in color. The little shallow blossoms are broadly open, and, consequently, the sumac at its best rivals the buckwheat and the linden in the rapidity with which it enables the bees to gather the honey. Strong colonies have no trouble in gaining twenty pounds or more in a typically good day.

The usual routine of the honey-flow is as follows: From July 8th to the 15th the bees are getting acquainted with the slowly opening bloom, and get their brood-nests filled





FIG. 1.—CLUMP OF SUMAC BUSHES IN FULL BLOOM.—FIG. 2.

Fig. 2 the same as Fig. 1, but taken three weeks later. Bloom all fallen; only the leaves and bare flower-stalks remain above the brush.

and begin work in the sections. From July 16 to the 22d the maximum bloom is on, and the sections are filled then if ever. From July 22d the bloom drops off rapidly, and the bees simply complete the sections already started. To put on more supers after the 22d of July almost invariably means a lot of unfinished sections.

While the bees are busy on the bloom, there is usually a bitter odor about the apiary, resembling the smell of crushed lettuce leaves. The new honey is more or less bitter to the taste. Probably some essential oil of the plant, an oil which is also in the milky juice of the plant, is present in some amount in the honey. As the smell also resembles the fragrance of milkweed, and as the bees work on milkweed while the sumac is in bloom, it is possible that this bitter odor and taste come from that source. If it is not the milkweed which lends the bitterness, then sumac honey varies greatly. I used, in

Worcester Co., Mass., to get sumac honey so bitter that almost no one could eat it. There the milkweed was in greater evidence than the sumac. Fortunately, the bitterness is transient, and, even in the case of honey, so bitter at first that it is as though one dissolved a grain of quinine in each spoonful, age will remove the disagreeable taste, and by winter the honey becomes edible. In the case of the sumac honey in the vicinity of Norwich the bitterness is mostly gone soon after the honey is sealed.

One has to eat sumac honey to appreciate it. I have yet to find any one who does not like it, provided he can eat *any* honey. In fact, many persons who dislike honey as a rule have expressed a liking for sumac honey. There is a richness but at the same time a mildness about it that will suit the most sensitive taste. Once a customer always a customer, if one buys sumac honey.

When pure the honey is a golden color.



FIG. 3.—A SINGLE SPRAY OF SUMAC BLOOM.—FIG. 4.

Fig. 4 is the same as Fig. 3, but is taken three weeks later; only the main stem of the flower-cluster remains and even the curling tip of that is broken off.



Gold is yellow; but place a thin sheet of the metal to the light and the transmitted light is green. So with this honey—gold in color or green in color, according to the light. Liquid sumac honey half filling a tin pail will look like paraffine oil or yellow vaseline, having a peculiar sheen. The honey has no noticeable odor except the bitter one spoken of; and after that is gone, little odor is left. When properly ripened the honey is very heavy, and, like apple-blossom honey, waxes instead of candies. Neither of these honeys in absolute purity would probably grain, but would become thickly gummy; therefore sumac honey has excellent keeping qualities, comb honey being apparently as good the second season as the first, if properly kept. I have never seen a single cell of this honey candied, though I practice keeping unfinished

more widely branched, and is looser than the pistillate. Soon after blooming, not only all blossoms of the staminate, but the side branches of the panicle as well, fall and the flower-stalk is left naked and black with a curled tip which soon breaks off. The pistillate bloom acts far differently. It is compact to begin with, and as soon as fertilized becomes still more compact, the branches hugging closely to the main stalk. The seed-vessels, each containing a seed not unlike the stone of a "choke-cherry," form a compact rigid bunch which stays on after the fall of the leaves, and even survives into the second season. These clusters of seeds, because of their crimson color, are striking objects after the fall of the leaves. The color is due to little hairs on the seed-vessels, which hairs are very sour to the taste, and the plant is sometimes called the "vinegar-bush."

The bloom is rich in pollen, and during a slow flow the bees bring in huge loads of yellow pollen. Even during the best yields the bees gather pollen during the morning hours before the sun has warmed the nectaries. Later in the day, however, the pollen loads become less frequent.

I have already spoken of the rapidity of the flow, and those who are familiar with heavy flows from other sources need no further description; but it may interest others if I add a few words here. About ten o'clock on July 18th, let the day be a hot one, the pollen loads cease to go in, and the distended abdomens of the ingoing workers tell one that the flow is on. By noon the entrance is one rushing stream of anxious bees, every home-coming bee so heavy that it more often than not falls short of the entrance, while the out-going bees are so hurried that they have not rid their bodies of the pollen dust accumulated during the previous trips. This activity continues, and the honey by two or three o'clock so crowds the capacity of the hive that the honey-curing bees hang on the outer walls with bodies painfully distended with the new honey. Inside, comb-building proceeds with the greatest activity, and the field bees keep right on bringing in the nectar. Open the hive and it will be seen that not only every open cell but every depression of any sort glistens with honey.

It is at this stage that the strength of the combs is severely tried. With the thermometer 96 in the shade, the bees and combs loaded with honey, the softened wax will give way, even sliding down over the wires of the frame.



FIG. 5.—CLUMP OF SUMAC THREE WEEKS AFTER BLOSSOMING.

The seed clusters are numerous. Near the upper central part is a year-old seed-cluster, with a white sheet of paper placed back of it.

ed sections over from one season to be completed the next. Except for more stain on wood and comb these sections could never be detected from the others.

It is safe to say that much of Connecticut would be worthless for bee-keepers but for this plant. Here it can be relied on to yield every year, not, of course, with perfect uniformity, for, like other honey-plants, the sumac is dependent on the weather. If July is abounding in good hay weather, our colonies will store from 40 to 100 pounds each; but if there is but little good hay weather during July we may not average 20 pounds to the colony. Fortunately, July is not often free from good hay weather.

The photographs can scarcely convey very vivid ideas of the plant, since the bloom is so minute. I should have stated before that the flowers are dioecious. Both kinds of bloom yield honey, and the bees seem to work impartially. The staminate bloom is





APIARY OF GREGORY BRUNDAGE, SALISBURY MILLS, N. Y.

The rush keeps up through the afternoon, and, if any thing, the nectar flow increases as the afternoon wanes. Darkness alone puts a stop to the work, and affords the bees a chance to prepare for another day of labor.

We sometimes pay dearly for those excessive flows, caused as they are by hot waves of great intensity, for the flowers are either blasted or else matured so rapidly as to cut the season off short. It is much better that the weather be moderately hot, not to exceed 85 in the shade, and thereby have the season extend over a longer period of time.

Norwich, Conn.

### NEW YORK STATE BEE-KEEPERS.

Gregory Brundage, of Salisbury Mills, N. Y.; the Man, the Location, the Method; the Value of Large Powerful Colonies.

BY D. EVERETT LYON.

*Field Correspondent for Gleanings.*

Lying ten miles back of Newburg, past which the silvery Hudson wends its sinuous way, and nestling beneath the shade of Storm King Mountain, is the little village of Salisbury Mills, N. Y. The interest in the village

to bee-keepers lies not so much in that it has large paper-mills, as that it is the home of as progressive a bee-keeper as can be found in the Empire State. Mr. Brundage is a born bee-keeper, and takes real delight in working among his "pets" as he calls them.

The Brundage home is a typical farmhouse with great shading trees in the front yard, and in it is dispensed a hospitality of a royal order. The location is not an unusual one, there being practically no buckwheat as in the upper portions of the State; nevertheless there is a good early and late flow,



MR. BRUNDAGE AND HIS TWO HELPERS.





MR. BRUNDAGE'S APIARY, SHOWING THE 14-FRAME HIVES.

each of which is extracted at its end. The spring flow is principally white clover and sumac, while that of the fall is goldenrod, buckwheat, and wild aster, and frequently the wild-aster flow in the fall exceeds the earliest flow of clover.

Personally I do not believe the asters pro-

duce more nectar than the earlier flows, for doubtless, the extra strength of the colonies in the fall (a condition not always present in the spring) accounts for the larger fall crop.

It was in 1886 that Mr. Brundage's mother purchased five colonies of Italian bees for \$50, and these formed the basis of the present apiaries.

Mr. Brundage runs about 350 colonies in three yards, and in good years has averaged over 100 lbs. of extracted honey per colony.

In addition to honey-production he rears several hundred queens each year, under conditions that produce the very best.

He is an extensive fruit-grower, dairyman, and poultry-raiser, in addition to keeping bees, and it is this fact that has led him to make some experiments that have proved to be very successful.

Not being able to extract often, because of other duties, he felt that a hive holding 14 frames was best suited for his purposes, as there would be very little swarming, when an extracting-super of the same size was placed upon it, and his



A CORNER OF THE APIARY AND ORCHARD.



swarming has not averaged one per cent from these colonies, and booming colonies they are. These fourteen-frame hives are wintered out of doors in a packing-case, and this packing is left on the entire year, as far as the brood-chamber is concerned, and the results have been, first, booming colonies; second, non-swarming; third, no queen-excluders needed, as the queen doesn't go above in one hive out of fifty; fourth, no clustering of bees at the entrance; fifth, big crops of honey due to the fact that there is little fussing done to hunt for queen-cells, etc., and thus disturbing the bees.

Mr. Brundage says that, for an out-apiary especially, these larger hives are for him the *sine que non* of perfection, and he expects to have every one of his colonies eventually housed in them.

Stephen and George are two noble little fellows, and work like Trojans in the apiary, helping their father.

Rye, N. Y.

#### A SOUVENIR POSTAL SHOWING A WINTER SCENE IN CANADA.

#### Bees Store Honey in the Portico of a Hive.

BY R. F. HOLTERMANN.

I am sending you two photographs. The first shows bees in winter quarters at the home apiary of Mr. J. F. Miller, Vice-president of the Ontario Bee-keepers' Association, London, Ont. Mr. Miller used this view on a postal card which he got up as a souvenir.

The other is a snap-shot of a 12-frame colony owned by S. E. Pickett, of Victoria. When the extracting-super was full, the bees began building comb and storing honey in



A COLONY SHORT OF ROOM THAT STORED HONEY IN THE PORTICO OF THE HIVE.

the portico. After a second super was put on, the bees took the honey out of these combs and stored it inside the hive.

Brantford, Ont.

[The editor had the pleasure of seeing the apiary of F. J. Miller in its winter quarters just as it appears in the illustration. Two hives are placed in each winter case. The bees are then warmly packed, and left alone the entire winter.

It may be interesting to our readers to know that Mr. Miller has a beautiful residence on a very picturesque sylvan height of ground just outside of the city of London. He is a retired business man, and has gone



VIEW ON SOUVENIR POSTAL CARD SENT OUT BY F. J. MILLER, OF LONDON, ONTARIO, CAN.



out into this beautiful retreat, where he is now devoting his entire time to the production of honey in Heddon's divisible brood-chamber hive. This hive, by the way, he considers far superior to any thing else in the labor it saves in the handling of bees. The big crops of honey he secures without hiring any help show that his opinion is not founded on mere theory.

we bee-keepers of to-day should begin to avail ourselves of the direct knowledge concerning the actual growth of the bee from babyhood up. The suggestions offered by our correspondent are interesting as well as helpful.

The other scheme, using a double glass for the purpose of additional protection, is also a good one. But such glass ought to be the French plate in order that one's vision be not obscured.

We ought to state that any single-comb observatory hive can be adapted to use the crosswise principle. With this long preface we will now let Mr. Latham speak for himself.

—Ed.]



ALLEN LATHAM'S OBSERVATION HIVE WITH COMB BUILT IN THE USUAL WAY.

Mr. Miller derives a great deal of pleasure from a good camera, and he has promised us some views of his place. He is a genius in many ways, and we hope our readers will know him better.

In an extra good honey-flow a colony of bees will sometimes build comb out on the portico, as shown in the other illustration; but cases of this kind are very rare, however, and the photo shown is, therefore, all the more interesting.—Ed.]

## A DOUBLE-WALLED GLASS HIVE.

Converting a Single-comb Observatory Hive into One with the Combs Built Crosswise Against the Glass; How to See the Young Bees Grow in the Cells.

BY ALLEN LATHAM.

[The reader's attention is called to the description of the scheme for making bees build comb at right angles to and against the glass rather than parallel with it. Maraldi, before the days of movable combs, in his early experiments built a glass hive the two surfaces of which were so far apart that the bees would necessarily build crosswise as well as parallel with it. Huber and Réaumur also conducted experiments along the same line.

Very recently Mr. A. C. Miller and Mr. Allen Latham have revived the principle, and it is time that

ple in construction yet sufficiently pliant in manipulation to admit of experimentation. The usual home-made glass hive is built in an unsatisfactory manner, and does not satisfy a person eager to go further; while, on the other hand, few of us care to burden ourselves with the bee-metropolis devised by Dr. Bigelow. Let those who care to do so adopt an expensive and gilded hive, and we all respect Dr. Bigelow in his love for the beautiful; yet no one sooner than he would deny that external beauty in a hive or in a girl is a criterion by which to judge what is going on inside the shell of beauty. Are the pretty girls pictured on pages 1580, 1581, better "schoolmarms" than their less fortunate sisters? One who has leisure, and whose pocketbook will stand it, may find pleasure in contriving observation hives of great expense and complexity.

To my mind the simplest is the best, and such can be made as follows: Procure a straight-edged board of good material, of sufficient width to allow for inside width of hive (for single comb this inside width should be  $1\frac{1}{4}$  inches); for four thicknesses of glass and for two air-spaces,  $\frac{1}{4}$  inch each. If one chooses he can make a still warmer hive by allowing six panes of glass and four air-spaces. Another strip  $1\frac{1}{4}$ , or the inside width,



of  $\frac{3}{8}$  material; some strips  $\frac{1}{4}$  by  $\frac{3}{8}$ , and finishing-strips, complete the lumber required. The bottom and ends of the hive are cut from the wide piece; and fastened to the inside faces of these are pieces cut from the  $\frac{1}{4}$  strips. Thus a rabbeted frame is made ready for the glass, then the narrow strips, then more glass, and finally the finishing-strips. These last are put on with screws so that glass can be removed (from one side at least). The photographs and the natural ingenuity of man will make up for any deficiencies in these directions.

By using hard wood, and finishing the same carefully, this simple hive will look as well as the best.

Several good ideas are bro't out on pages 1358, 1359, by Mr. Savage, but much of the fussy detail shown there is uncalled for. There is no need to complicate the care of the observatory hive as this writer seems to do, and his hive with its single glass and numerous cracks would be fit only for warm weather. It is profitable to study the bees in a glass hive the year through.

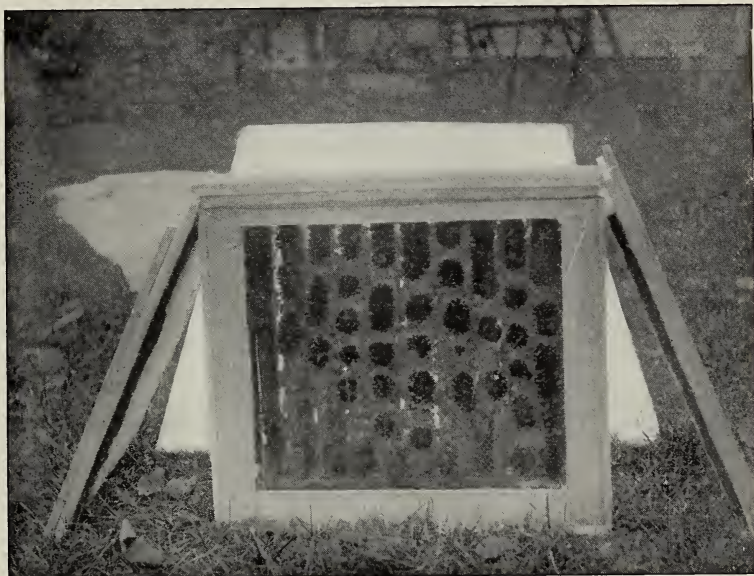
The space between the glass walls, or inside width of hive, should not be more than  $1\frac{1}{4}$  for a single comb, yet a greater width than this might lead to some very interesting results.

That the glass may be the more easily removed, it is well to have the  $\frac{1}{4}$  strips less than  $1\frac{1}{4}$  on the side nailed to the outer wall. This permits the glass to fit snugly to the wood so that little propolis gets into the crack. Glass walls are easily cleansed with pearline or other good soap dissolved in warm (not hot) water. Water too warm will spread the wax and propolis.

One of the most serious errors made by beginners in the study of bees in such hives is that of placing an old comb, fully built in the hive. Beyond the social life of the bee, the unloading of honey and pollen, the laying of the queen, and a few other phenomena, one can not go with such a comb. Far better is it to use a frame with only a starter, or at most only half-built comb. Then one can see the process of comb-building, the packing-away of pollen, the filling of the cell with ripened nectar, and a great variety

of bee-phenomena—phenomena to be seen by both reflected and transmitted light.

Like all others I began with ready-made combs, and I made little advance in this entrancing study till I passed to the stage of making the bees make their own comb right in the glass hive. Even this grew dull after a while, because I was still out of reach of much that I wished to see. Sometimes the



AN OBSERVATORY HIVE WITH THE COMBS BUILT CROSSWISE OF THE CROSS-BAR.

bees would build some comb against the glass wall of the hive, and this put into my mind the next great advance. So I robbed my bees of their comb and placed in their hive a simple top-bar without ends or bottom. To this bar were fastened a number of short transverse starters of foundation about  $1\frac{1}{8}$  inches from one another. The bees did not take well to this exchange, and after an hour or so removed to the top branches of a tall maple. I brought them back and shut in their queen. They went to work shortly and built the combs shown in one of the pictures accompanying this writing. A white background is furnished the photograph so that the spaces between the combs will be the more apparent. That colony, by the way, has lived unbrokenly (save the time spent in the afore-mentioned maple) in that hive since May, 1902. I playfully named their queen Wosa, and the Wosa dynasty is inscribed on one end of the hive thus:

Wosa I.  
May, 1902—May, 1903.  
Wosa II.  
May, 1903—July, 1903.  
Wosa III.  
July, 1903—May, 1904.

Wosa IV.  
May, 1904—June, 1905.  
Wosa V.  
June, 1905—June, 1906.  
Wosa VI.  
June, 1906—

In another place are recorded the dates of issuance of the several swarms. An interesting fact in connection with Wosa VI. is that

her bees are fully as yellow as were those of her great-great-grandmother. I usually have much difficulty in getting Italian queens purely mated; but here I have had a remarkable exception, for only one of the six queens was impurely mated, and the effects of that mismating are practically lost.

The length of this article will not permit me to enter into detail in depicting all that these crosswise combs in this hive have taught me of bee-life. I flatter myself that possibly, aside from Mr. Arthur C. Miller, no other living man may have seen what I have seen. I would say here that Mr. Miller and I have worked along similar lines entirely independently, for we have known each other only one brief year, and that Mr. Miller has at

colony. Most of the old bees will return to the hive, and then the young bees left and the queen can be hived in the glass hive. Keep the hive dark a few hours till bees begin to build comb and are contentedly working.

It is most desirable that some handy arrangement be made for feeding such a colony, for almost constant feeding is necessary to keep the small colony in prosperous condition. In a good honey-flow it will more than take care of itself; but a few weeks of scarcity of nectar will bring it to the verge of starvation.

I keep the two hives shown in the pictures going all the time. The older one is kept unchanged so that I can study aging combs, while the other is subjected to frequent rebuilding of its comb. I expect the coming summer to try two more hives which shall mark a still further advance in opportunity for further bee-study.

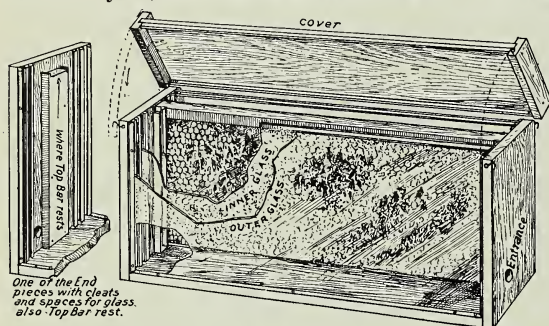
The hive pictured with the single comb shows what can be done out of season. A new lot of bees were put into this hive in September, and they were compelled to build their comb thus late in the fall. Most of the comb was built in October, yet the colony is in fair prospect of going through the winter.

Even though one does not winter such an observatory colony he ought to start one early enough in the season to see it go through the swarming fever. Though the swarms from such colonies are not perfectly normal, one will still see much that is instructive and highly interesting. After the swarm has left, the rival queen-cells become centers of interest for both bees and bee-keeper. One may find, as I did one June, that the oldest virgin is not always the first one to emerge, for at that time the oldest was kept imprisoned in her cell, and a younger sister allowed to come out and go with a swarm. The action of the virgin which is to become the ruling queen of the hive will be watched with avidity.

An ingenious person will contrive innumerable experiments to put to the test with these hives. No live bee-keeper should be without one or more of these easily made and simple hives. His education demands it. Many of us must be satisfied to go without the Bigelow Educational hive, the University, but all of us can take the Common-school hive here depicted, and possibly matriculate for a later course in the University.

Norwich, Conn.

MR. GEORGE ROSE, 50 Great Charlotte St., Liverpool, England, advertises to furnish 1000 plants of heather for \$7.50. Here is a chance for some one in an elevated peaty district in the mountains to naturalize this great honey-producing plant. New Yorkers will please notice.



DETAIL OF THE DOUBLE-GLASS LATHAM HIVE, SHOWING A FRAME OF LANGSTROTH DIMENSIONS.

present a hive vastly superior to what I am able to show here. Doubtless he will soon show his hive and describe his methods in his own paper, the *American Bee-keeper*. Not to go into details, I will mention that one can determine by this crosswise arrangement of combs, in observatory hives, how the queen lays, how the nurse-bee feeds the larva, how the larva spins its cocoon, etc.; how the pollen-packer packs away the pollen, how the honey-storer (not gatherer) puts away the honey, etc.

As I have hinted before, one should make use of these hives the year round; for to study bee-life in only the height of the season, or even through the summer and early autumn, is not enough. It is not difficult to winter bees in these hives if proper precautions are observed. If it seems desirable I will, in a later article, go into detail regarding the wintering of bees in observatory hives.

The simplest way to place these hives in the window is to raise the sash and firmly fasten a board a few inches in width across the bottom of the open window so that, when the sash is lowered, it will rest on the upper edge of the board. This board is then screwed to the front of the hive, a hole in the board being in juxtaposition with the hole in the end of the hive. The entrance, a round hole one inch in diameter, should be at the end of the hive close to the bottom.

One of the best ways to stock such a hive is to shake out on the ground the queen and several thousands of workers from a regular



## WAX-RENDERING.

### A Mammoth Solar Extractor in which Artificial Heat is Used.

BY R. C. AIKIN.

[This is the first of a series of three articles by Mr. Aikin, and is, as will be seen, a description of the solar extractor which he now uses. The second article, which will appear in the next issue, is a complete description of a large solar-extractor building, and will be illustrated by drawings that will enable any one to build an up-to-date outfit, including that very necessary contrivance, a honey and wax separator. The third article treats of different methods of working over the refuse from the solar in steam and hot-water presses. It has cost Mr. Aikin a great amount of time and money to acquire the knowledge which enables him to give this information; and since he has learned how to make money himself out of wax we think he is well qualified to tell others how the work should be done.—ED.]

The rendering of wax is an important subject. If the price of wax continues anywhere near its present figure—and it has not varied far from it for thirty years—its production will be more considered in the future than it is to-day. Even should honey advance in price until it becomes much more remunerative than at present, yet I feel confident the returns to be obtained from wax will in the future be much more considered than at present, and not only considered, but will be by no means so small a factor as at present.

For years I have been very much interested in the problem of rendering wax. I suppose I have invented about as many devices as any other man in our ranks in my endeavors to get speedy and effective apparatus for doing the work, and yet I do not think we have by any means reached the climax in such appliances. I have tried many ways with water and steam processes, but all without pressure, having had machinery for the purpose over 25 years ago. In those days I made an arrangement to place over a pot of boiling water, and cooked by steam, afterward pouring in boiling water over the slumgum, when the steam had brought out all it would; then I would take out the slumgum and put it between boards and get on to it with my weight, and thus work out more wax. Though never satisfied with these riggings, yet I never realized until recent years how much wax I lost.

#### ABOUT SOLARS.

I have built solars, big and little; remodelled, improved, and changed those I have constructed, until I could hardly guess how many I have built. When the solar was first written up in the journals I at once became very enthusiastic, and soon had one in operation, and from that time till the present I have never ceased to study and improve on and experiment with such appliances. Over 15 years ago I began to work over the solar refuse by water and steam, and thought I had about reached the limit of wax-getting; but I know now that there was a large per cent of wax wasted then.

The solar is a fine appliance, and no apiary should be without one. In the accumulations of burr-combs there is sure to be quite a little honey, and, as well, in combs and all

odds and ends of which we get wax; every thing that has any honey in it should be put through the solar to secure the honey for vinegar or feeding purposes. In all localities where honey tends to granulate, this is very important. One not having tested the matter would scarcely believe how much honey can be saved by the solar in a year. Then, too, the prettiest yellow wax obtainable by any process is that from the solar. Burr-combs are almost pure wax, and leave very little residue except the propolis that is scraped off with them, and these give the very finest of wax by the solar process. If melted with water the propolis will taint the wax. By all means have a solar, and use it for rendering every thing containing honey, all burr-combs, and also all dry new combs that do not have many cocoons in them; but when it comes to old black dry combs it is of no use to put these through the solar, for the slumgum will so nearly absorb all the wax that it will not pay at all. Reserve such for water and the press to go in with the solar slumgum.

#### SOME THINGS I HAVE LEARNED ABOUT SOLAR CONSTRUCTION.

Never use wood about a solar. Take wood that is seasoned to its best, and, when subjected to the great heat of the solar, then get the effect of rain, of internal moisture in the form of steam or vapor that will sometimes be in the machine, then dried out again, and so on from day to day, and it will not stay in shape very long. I used to use wooden sash-bars, but it would not be long before the putty was peeling off and the thing was in bad and leaky condition. As the years went by I used less and less wood in any part of my solars until about the only place I would permit any was for plates on top of the side walls. At this point I thought I must have at least a strip of wood to fasten the rafters or sash-bars to (the walls being of brick), imbedding them in mortar; but even then moisture would get to the wood and swell it and break the mortar loose. I now leave out all wood, using for the sash metal bars, and for the walls brick; then imbed the ends of the rafters and the edge of the glass in the same mortar used in laying the brick.

For sash-bars, if one can readily get such as are used in greenhouse work they are all right; but I did not have access to any thing of the kind, nor to any machinery that would make what I wanted, so I went to the store and bought common bar iron, for a 5-foot reach, using  $\frac{3}{8}$  by 1½-inch. In these I drilled holes about every 12 to 16 inches, a little nearer one edge than the other. Next I took common galvanized iron strips, about one inch wide (a little less will do), and bent these, forming what would be just about equivalent to the half of a common T tin. Two of these put together would form a T. These strips were punched with holes to match the holes in the bar-iron and so adjusted that when one was set on each side of the bar they formed a rest for the glass, leaving

the edge of the bar to project upward about  $\frac{1}{4}$  to  $\frac{1}{2}$  inch above the glass, this projection forming the rib to putty to over the glass. When the putty sets to that iron it stays there almost for ever.

To get these bars made into a sash I had holes drilled just about in the center of the width of each bar, one at each end and one in the middle of its length. The bars are about 5 feet long—these to take a  $\frac{3}{4}$  rod. I forgot to say that the right-angle galvanized strips were bolted to the bar with stove-bolts. These  $\frac{3}{4}$  holes are made through the sheet metal too. Next I took old gas-pipe and had it cut at the plumber's into lengths corresponding to the width of glass to be used; then I began to thread the bars on to the rods, slipping on a bar, then a piece of the pipe, then a bar and another piece of pipe, and so on until I reached the end of the rods which are as long as the sash is to be, then by a tap on each end of the rods all was screwed up tight. This sash or rack I placed on the solar walls, and afterward placed the glass and putted it in. A small sash could be made complete before putting in place, but a large one is altogether too heavy, and not rigid enough to handle. Build it right on the walls.

#### POSITION OF GLASS IN REFERENCE TO SUN'S RAYS.

Some think the glass must be, as nearly as possible, so that the sun will shine directly through—that is, it should directly face the sun; but while the power of the sun may be a little greater shining through a glass at right angles, yet with the changing condition it becomes impossible to have it so. I do not believe there would be a tenth enough gain to justify building even a small machine calculated to shift toward the sun as it goes over. In the evolution of solar building I gradually changed from the long north and south form to making the length east and west. After finally deciding on the east and west form I built with a three-slope hip style; but this form entails cutting glass into diagonal pieces, and, all together, is very much more difficult of construction. I now build with a gable, or, rather, half gable, as the main roof has but one slope lean-to style. My present machine is  $5 \times 16$  feet, and is built against the south side of a  $10 \times 16$  building, with the opening into it from the main building. So far as the solar is concerned it does not have any outside opening whatever. An alleyway runs along the north side, from which the work of filling in the comb, of stirring as it melts, and of removing the slumgum, is done. In this alley I can walk perfectly upright with a can of honey or whatever I wish to carry on my shoulder.

I have three melting-pans made of galvanized iron—a  $3 \times 6$  in the east, sloping west, with a slight dip to the northwest, with a discharge at the northwest corner, and a similar one in the west sloping east, with discharge at northeast corner; and the third one, a  $2\frac{1}{2} \times 4$  between these, slopes to the north, with a discharge at both northwest

and northeast corners. The incline of these pans is about an inch to the foot.

The alleyway runs along the entire north side, except that in the east end I have a furnace made of brick, with an old cook-stove top for a cover. Grates are built into the furnace, and an old cook-stove oven-door with its frame is used for a furnace-door, and this door opens on the *outside of the solar*. Never, under any circumstances, have the furnace or ash-pit open inside of the solar-room. The ashes and dust from them are a perfect nuisance inside. This gives me the entire top of that cook-stove on which to cook any thing I wish on the inside, and to radiate heat for heating the solar; but the fuel and ashes are all handled from the outside.

Along the south side of the alleyway is a brick wall. This wall and the outer south wall were built up about four feet high, and then sheet metal laid on top of them, and then the outer wall continued up about another foot to receive the south end of the rafters or sash, and the inner wall built about two bricks on the sheet metal. This sheet-metal floor at the east end is covered with mortar to break the force of the heat at that point, else the wax and honey over it would burn with a hot fire in the furnace; and it is also about three or four inches higher than the stove top of the furnace. All the smoke and fire from the furnace pass under this metal floor the whole 16 feet to the west end, and pass into the flue or smokestack at the northwest corner, and a few inches above this floor are the melting-pans resting on old boiler-tubes for supports.

But we will let this suffice for a description of my present machine. It is good, but I could improve on it in several particulars, and in my next article I will describe the ideal form for such an apparatus, and also give some sketches to show how to construct.

Loveland, Col.

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#### THE HATCH WAX-PRESS.

Some Comments and Suggestions on this Method of Rendering Wax.

BY C. A. HATCH.

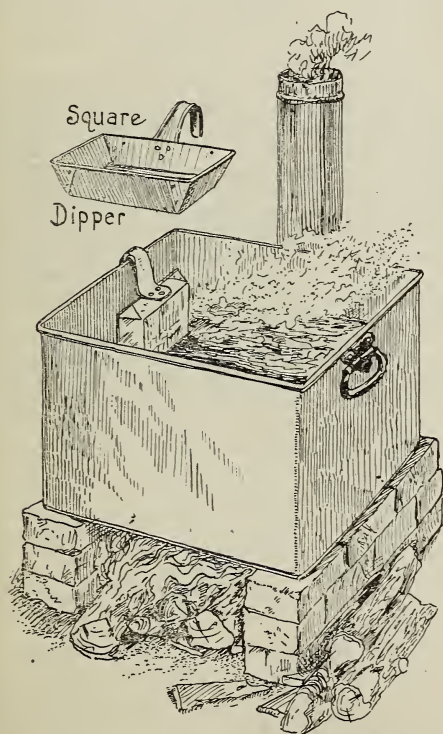
The Jan. 15th GLEANINGS came yesterday, with the last chapter by H. H. Root on wax-rendering. I am looking forward to the time next spring when I can test the press as it has been modified. Until then I do not feel competent to offer any criticisms or suggestions, but would suggest some things as to your method of working.

Why you advise a wash-boiler to melt wax in is beyond me unless you want to raise trouble between a man and his housekeeper; for a woman who attempts to wash, using a boiler that has previously been used for wax-melting, is sure to lose her temper if not her religion, for it is no easy job to clean one after being once coated with wax and slumgum; and why use a boiler at all when a square box of galvanized iron is just as cheap,



much better, and can be used on a brick furnace outdoors to good advantage, while a boiler could not? About 30 bricks and two joints of stovepipe will make the furnace; and when not in use all can be packed away in some shed out of sight. Not over half an hour is time enough to make it complete; and any one with a town lot has room enough, and there is no mussing of floors to vex the good woman; and the square tank has advantages over the round one of being easier to skim—that is, if you use a square dipper as you ought to. If you ever used a square one you could readily see the advantages of it. A five-cent cake-tin is better than a round dipper.

I have two square tanks—one 15×15 in., and 15 in. deep; the other 18 in. in each dimension. A 15-inch one made of heavy galvanized iron would last a lifetime if cared for. A dipper should be about 6×6×4 in.



HATCH'S OUTDOOR FURNACE FOR MELTING COMBS.

deep, and have a flat handle, rather short, and bent to a hook, so as to hang on the edge of the tank inside when not in use.

Another mistake you make is in putting too much comb in the boiler at once. Just enough for one pressing at a time is enough; and when you are pressing it out your helper puts in another batch, fires up, and attends to the melted wax; or, if you are working alone, it will do no harm to let the press stand while you fill up for the next pressing.

Dipping the follower and rim into the boil-

er is just as well as to pour that painful of water into the press, and much less bother.

I usually put in about 4 gallons of water and slumgum at each pressing; but this means an indefinite quantity, for I may get more water than you do. Plenty of hot water is my motto, for beeswax seems to like to run out with water when it will hardly move with pressure. I use an old square five gallon can to catch the wax in. When the wax is deep enough to warrant it, I skim it off (with a square dipper mind you) into small tins to cool. These are kept covered as much as possible. With this method the water can be returned to the boiler before it gets much cooled, and the wax is ready for market with a little scraping at the bottom; and even this can be largely avoided by extra care in skimming when putting into the cooling-tins. The wax may need to be washed, as the water in the boiler gets rather "rich" in coloring before many hours run.

There is one point that should be impressed on all bee-keepers—i. e., that all heating and boiling of wax after being once melted is to its detriment; also that iron rust turns wax black.

Kingsville, Texas.

[For some reason or other, as we render wax, we have never found that we could save much time by skimming off the free wax that would rise to the top. We think that we can put the melted comb through the press, wax and all, about as quickly as we could that which was left after skimming; and, if we are correct in this, we save the tedious work of skimming and thus get along just so much faster.

Since we do no skimming, then, the shape of the melting-tank or can does not make so much difference. But we agree with our correspondent when he says that it is difficult to clean a wash-boiler successfully after it has been used for melting wax; and for this reason, then, it would not be best, ordinarily, to use the same boiler for washing clothes or for other work about the house. Keep that boiler for melting old combs, cappings, wax, liquefying honey, etc. Perhaps the only point in favor of a wash-boiler is the fact that it can be obtained at any hardware store, ready made, and would, therefore, cost less than one which had to be made to order. But if we were going to have one made, we would most certainly have it made with square corners, for many reasons. If of such a size that four 60-lb. cans could stand in it, it would be found very convenient for liquefying honey, etc.

The plan of an outdoor furnace is excellent. Many might find the ordinary feed cookers very valuable for this work. They can be purchased complete—that is, the tank, furnace, smoke-pipe, etc., for from three to five dollars. They are useful to the bee-keeper, farmer, or poultry-raiser.

We think we can do faster and cleaner work by pressing only about a gallon of melted comb at a time; and as it would not pay to melt up such a small quantity at once we

usually melt enough for ten or twelve pressings at a time, and thus do away with lots of fussy work. If two are doing the work it might pay to melt smaller quantities at a time; but as we render wax, only one man is needed to do the work. From our extended correspondence with bee-keepers who use this method of rendering we have found that the majority seem to melt a relatively large amount of comb at a time. However, almost every man has his own ideas concerning the easiest way of working, and this only proves that there is more than one good way of doing most things.—H. H. R.]

## THE OLD VS. THE NEW.

**The Fence Separator and the Plain-section System; why some Good Things are Condemned Wrongly; when Rightly Used, the Fence System a Success.**

BY G. A. DEADMAN.

Those of us who were in attendance at the annual meeting of the Ontario Bee-keepers' Association, recently held in Toronto, could not but be impressed by the good feeling that existed, and the readiness of many present to take part in the discussions. One of the many things that came up was the fence separator in the production of comb honey.

How puzzling it must be for a beginner to know what plan to adopt, or whose advice to follow! What some of us find to be "the best thing out," others "have no use for," and, may be (too often, I am afraid), condemn it untried. Many good things are as good as lost to some because, either from not being willing to adapt themselves to the new order of things, or too indifferent about them, or from being (shall I say?) prejudiced, go on in the old way with their own or old devices, in blissful ignorance of what they are missing.

The fence separator is an illustration of this. Some are ready to condemn it untried, or, if tried at all, not as it should be. We see this illustrated in about every issue of a bee journal. Sometimes *locality* is made to account for the difference; and in some instances, with some things, it may be attributable to that, but not always. We become wedded to some things from long familiarity with them, and are loath to try or have anything different. One might as well try to make a left-handed man believe that, with practice, he can do more with his right hand, as to convince some people that some things are better than others. In some cases—yes, in very many—such a course may be excusable; for from long practice and familiarity we can work more rapidly than we could with many things that may be really better, and we feel that any change would be at the sacrifice of time if not of money.

This, however, can not apply to such a thing as a separator, excepting as one may have to throw away the old in the adoption

of the new. I am convinced, however, that too often objection is made, or some things are condemned, because not made or used as the originator intended them. It would make this article unduly long to give so many examples of this that most of us must have noticed; and I will, therefore, confine my remarks to the fence separators in the production of comb honey.

At the Toronto convention one man objected to them because their use (he did not say abuse) would produce what he termed "washboard" comb honey, or that with uneven cappings. It was explained to him that this was due to the slats of the separator being too far apart, which is true, and it was stated that there should be slack  $\frac{1}{4}$  inch.

I would say that this is still unnecessarily wide. I make mine practically queen-excluding except above the top and below the bottom slat. I make the spaces a trifle more than that of the queen-excluding metal. This extra is because the slats of the separator, being thicker than the metal, would require to be a little wider apart.

I take it that the Root Co., who originated this separator, never intended that the slats should be spaced other than what is necessary to allow a bee to pass freely through them, and so we find a good thing abused, which is unjust to ourselves, the originator, and an injury to the cause.

Briefly I will tell you why I like the fence separator. In itself, when made of the right material (basswood), and properly made, it is as strong as if not stronger than anything else on the market.

It will keep its shape; and with the slats 15 to the inch it is light and nice to handle. It is much more acceptable to the bees than either the all-metal or the old kind. The bees having free access from section to section will do more and better work than with some.

The bee-space is on the separator, where it should be. A customer has no use for this. The section being the same width all around, it is certainly easier to clean, and less likely to get damaged in handling. Not having so much wood as the beeway section it looks better, therefore sells better, and will bring more money.

Then they cost less to make and less to case, as four will go in the place of five.

It is my belief that the plain section with the fence separator will eventually supersede all others.

Brussels, Ont.

[You are entirely correct in stating that slats to a fence must be properly spaced, and that such spacing must be approximately of the right width to let the bees pass through. When fences were first put out, the spacing was considerably wider than at present, with the result that there was a little washboard honey reported; but later years have shown the very great importance of so spacing those slats that the space between them will be a small fraction wider than the slots of the perforated zinc, or, in round numbers,  $\frac{1}{4}$  of an inch. When so spaced there will be



very little gnawing of the wood, as a rule, and no ribbing on the face of the honey, or at least it is inappreciable. We omitted to state that, if the slats are placed too close together, the bees will begin to gnaw them; and when they once start the job they will make the space between the slats as much as  $\frac{3}{8}$  inch wide. Of course they are ruined, as the honey will be badly ribbed.

It is true that a good many things are condemned prematurely; and it is also true that some good devices give poor or indifferent results because they have not been used according to directions. Manufacturers find this out to their sorrow and annoyance.—ED.]

## QUEEN-EXCLUDING ZINC.

### How the Size of the Slots was First Determined.

BY DR. G. L. TINKER.

[To our newer readers it is proper to say that Dr. G. L. Tinker, some twenty years ago, was one of the pioneers, if not the principal one, to develop the use of and perfect perforated zinc. As a bee-keeper he was unsurpassed, and as a fine mechanic he was the finest in all beedom. The zinc put on the market prior to the introduction of his product was very crude; but the pattern of the metal and the size of perforation he put out is still the standard the world over.

As he states, he spent not a little time in investigating the size of the width of the perforations. The fact that he was so nearly right as to size attests his skill and apicultural experience.

But, owing to his lucrative and increasing practice as a physician, he was compelled to dispose of his bee-supply interest, and during the last 16 years he has all but dropped out of the bee-keeping world.

It is a special pleasure to us to know that he still retains an interest in bees, and therefore what he has to say on the widths of the perforations in zinc will be of more than usual interest.—ED.]

The method of obtaining the proper size of queen-excluding zinc perforations for worker bees has, I think, never been given to the public. Noticing in GLEANINGS of March 1 that there are some who think the perforations of our standard zinc should be a little larger for best results, I herewith give the method, as it will, no doubt, satisfy all that perforations  $\frac{1.63}{1000}$  wide is as nearly correct as we can hope to get them. My remembrance is that it was my old friend Doolittle who wrote about nailing strips of tin on a slatted honey-board to make a queen-excluder, and, of course, I had to make one. I soon found that it was a difficult task to nail on the strips so as to make the openings of a uniform width. In some places the bees could not get through, and in others the opening would be too large. I then noticed a little eminence on the top of the thorax, and that where the opening was a little too narrow it was this eminence that stopped them, although some could get through by twisting the thorax sidewise.

I had obtained a piece of what was called Chicago zinc, and placed it before the entrance of a hive. The perforations of this zinc were quite uniform in size, but plainly too narrow, as every bee would be stopped by that little eminence on its back; and if

it got through it had to twist its body to do so. I then carefully examined the wood-tin board that I had placed over the brood-chamber of a hive, and found a place between the tins where the bees could get through without being stopped by the eminence, and also saw that the hairs on top of the thorax were brushed down flat in the passage, but that the brushing-down of the hairs did not hinder them in their passage. The conclusion was at once formed that these places in the wood-tin board were the smallest practicable passage that could be used. I then took a common cut nail, filed it down smooth, and inserted it in one of these places that would just let the bees through easily, and made a mark on the nail where it came through, and I had found the width of the proper size of perforation to be used. Dies were then made and strips of zinc punched on a small wooden machine, and then fastened to a slatted honey-board, and it was found that the bees could get through the perforations without any hindrance, although the hairs on their backs would be brushed down in passage. Strips of perforated zinc were then placed before the entrances of hives, and the loaded bees watched in passage. If the edge of the zinc rested on the bottom-board so that it was not more than the length of their legs up to the perforations, the bees walked right through without any hindrance. If the lower edge of the metal was too wide, then the bees were somewhat hindered in their passage. This led to inserting the strips of perforated metal in saw-cuts in the edge of the slats, and such boards offered no hindrance to the bees. All that was necessary was to have a point on each side of the zinc that the bees could catch hold of with their feet, and they could pass the zinc, when heavily loaded, so quickly that the element of hindrance could not be computed.

Where there is nothing to catch hold of on each side of a perforated zinc sheet, the making of the perforations a little larger than necessary will not facilitate the passage of the bees. Their action in the passage of a sheet of perforated metal, even if the perforations were somewhat wider than necessary, might be compared to a drowning man catching at straws—there is plenty of room below, but nothing secure to catch hold of above.

New Philadelphia, O.

[The writer took pains to verify Dr. Tinker's experiments when his zinc was first introduced by testing the width of his perforations on the bees in our apiary by trying both the loaded and the empty workers. We found that Chicago zinc, to which the doctor refers in his article above, had a width of slot  $\frac{1.60}{1000}$  wide. The Jones zinc had a hole from  $\frac{1.60}{1000}$  to  $\frac{1.70}{1000}$  wide. But at that time there were many complaints of queens passing through the holes in such metal, and also complaints that loaded bees would not go through the Chicago pattern. It was at that time that Dr. Tinker, all enthusiasm, set about to find the proper width. He sent

us sample metals to test, which we did. The width of perforation that he adopted was very close to  $\frac{1}{1000}$  wide. Fearing that  $\frac{1}{1000}$  might be too narrow, we made some zinc  $\frac{1}{1000}$  and  $\frac{1}{1005}$ ; but occasionally we got reports of queens going through it. When we bought the Tinker machine we adopted his size, but we have since made zinc  $\frac{1}{1004}$  to  $\frac{1}{1006}$ , thinking that, perhaps, the average producer would prefer to have an occasional small queen pass through than to have some workers hindered when heavily laden with honey.

Dr. Tinker brings out one point in his article above, which, if he ever mentioned it before in his public writings, has never been really grasped by the bee-keeping public. If he is right (and we feel very certain he is) then  $\frac{1}{1000}$  width of perforation in the wood-zinc Tinker board would give the same facilities for the passage of the bees that a solid zinc board would without any slats, with perforations  $\frac{1}{1005}$  wide. It seems reasonable to suppose that, when the bees have a wooden slat on each side of the perforation, or a foot-hold, they can pull themselves through easier than when there is but little for them to get hold of as in the plain metal.

In this connection it is proper to state that Dr. Tinker was the inventor of the wood-zinc slat honey-board. Mr. Heddon first brought out the slat board, and Dr. Tinker conceived the idea of inserting the perforated zinc strips between the slats.—Ed.]

## BEES AND ORCHARDS.

### What is to Blame for Poorer Fruit? Bees as Pollinators; How to Prevent Spraying Trees in Bloom.

BY BURTON GATES.

New England has long held honors in the production of fruits. Many of the now famous varieties were originated in these States, especially Massachusetts; but it was only recently that I heard a prominent horticulturist here say that this State must "get a move on" if she retains her long-honored reputation. A new problem now confronts the fruit-producer. The San José scale has gained such a hold that the farmer is making every effort to save and protect his trees. At first thought, this may appear to have little bearing upon bees; but indirectly, as I will try to show, the scale problem may have its resulting effect on bee-keeping.

It is common knowledge that, in our grandfathers' days, bees were kept in nearly every farmyard. This reminds me that I have often heard my father say, "We don't seem to have such fruit now as we used to have on my father's old place." Record shows that my grandfather, as did many another in those days, raised fine apples and pears. Now when I see the miserable apology for native fruits displayed on the counters and on the street peddlers' wagon, I feel sure my father's remark is not far from right. But what is the matter? Probably

not one thing nor two—lots of things; and the lack of bees in the orchards comes well toward the head of the list.

In this connection there is one fundamental and often totally unconsidered factor, which is as vital for a successful fruit crop as is water in the soil or trees free from injurious insect and fungus pests. It is the agency of the bee in the fertilization of the bloom. There is an abundance of proof on all sides of the great value of bees as pollen-carriers; but, unfortunately, the orchardist seldom thinks of stocking his orchards with bees. He usually trusts to luck. If it is a fine day when his trees are in bloom, bees may come from several miles away and "set" a good crop of fruit. Let it, on the other hand, be a day of sunshine and shadow, with occasional showers, as is often the case in April and May, and the trees will not be "half set." But suppose a farmer has bees at hand in his yard, and there comes a lowly day when they can not fly far from home, but can fly between showers. The result is evident—trees near by will be "set." You may reason for yourself. Would it pay to keep bees in the orchard?

The amount of honey produced in Massachusetts falls short by tons of the amount of honey consumed in the State. If it is as the horticulturists say, that there is a need of improving the fruit product of the State, as is the case for certain, and of increasing the product, then why not combine natural forces—let the bees and the trees act upon each other reciprocally?

The equations might well be, the more trees, the more bees; the more bees, the more honey; the more honey, the more money. This equals prosperity.

A very pertinent observation on the value of bees as pollen gatherers I just now note in the Twenty-sixth Annual Report of the Ontario Bee-keepers' Association. Gentlemen speaking on a petition to the Board of Agriculture to investigate the value of bees as agents of fertilization of blossoms of fruits, clovers, and buckwheat, said, "There is a man in our neighborhood who is supposed to have as much brains as any one around there, and who says the bees just suck the life out of alsike clover." The next speaker offered proof to the contrary, and said, "I grow some alsike clover. I spoke to a man who owned a thrashing-machine, and told him that I thought I would thrash my clover. "Oh!" he said, "there isn't any seed in alsike this year." I told him there would be in my case, as I had bees. When they came to thrash it they were surprised at the amount of seed I got out of it. Plenty of bees in orchards and in fields will, I believe, prove a surprise to many.

Returning to the San José scale problem, which has now emphasized the necessity for spraying orchards, let us consider the possible results on bee-keeping, for which we must look out. Spraying as generally recommended for the scale, when the trees are dormant, of course will never injure bees. But there are always a few who will not follow the di-



rections, and who will spray when the trees are in leaf. They will try to combine remedies for the scale and for the various other insect and fungus pests, and will introduce arsenic and copper compounds into the sprays. These, if used when trees are in bloom, mean death to the bees of that region. Although no one is ever told to spray in fruit-bloom, but, on the contrary, is cautioned *not* to use his pump at that time, there is always one who is anxious to try the experiment. Perhaps he is dependent on his neighbor for a pump. His neighbor is not using it in fruit-bloom, therefore it is a good time to borrow.

Bee-keepers can not be urged too strongly not to spray trees in bloom, and to see to it that their neighbors do not borrow spray-pumps at this time. So strongly did the Ontario bee-keepers feel in this matter that a year ago at their convention they offered a "reward of twenty-five dollars for the next conviction of any one illegally spraying while the fruit-trees are in blossom." I am not aware that the example has been made of any one as yet. But see to it that you do not suffer loss of bees through your neighbors' carelessness. Here is a case which has just come to notice.

"When the fruit-bloom set in I had some very strong colonies. After fruit-bloom was done I had a little bunch of bees which you could hold in your hand, in the corner of the hive.... I know now that spraying did it, although I could not find the guilty party."

The enlightened bee-keeper can see, as herein outlined, a happy combination of forces which can be harnessed and made to yield good returns. Are not the apiary and the orchard as good a team as the often recommended combination of bees and poultry, or is it better? It will pay to try. Get informed in the terminology of the day; "get wise;" meet a situation as did the man below quoted met an illegal spraying case.

The bee-keeper says, "I went out into my yard with the lawn-mower and found my bees hopping around like grasshoppers. My home apiary was much affected, and I came to the conclusion that it was the result of spraying. I found that a lawyer who lived near me, and who had a very nice place, had been spraying, and was going to spray the next day. I went to him and told him that he must not do it. He was very much surprised when I told him that it was against the law; but he did not spray his trees." Get wise, and don't be afraid to teach law to a lawyer.

Clark Univ., Worcester, Mass., Dec. 18.

[Every thing that Mr. Gates suggests in the foregoing, as we know from accumulating evidence, is literally true; yet in spite of it the average farmer either does not know it or else indulges in the silly notion that his neighbor's bees are sucking the sweetness out of his fruit to be. The up-to-date fruit-growers, fortunately, do recognize the valuable services performed by the bees. Some of them are putting a few colonies in and about their orchards, but the great majority of them are making no such provision. In

most parts of York State, and Michigan, for example, it would not be necessary, for the reason there are so many bee-keepers all through the fruit sections of those States, and pollination is, therefore, taken care of. Bee-keepers would do well in some localities to get their neighbor fruit-men to put a colony or two in their orchards, thus securing an advantage to the orchardist and to the bee-keeper as well. But how does the bee-keeper profit by it? In this way: If Mr. Fruit-man thoroughly appreciates the value of the bees as pollinators he will be less inclined to make trouble when his neighbors' bees hover over his broken fruit while it is being packed, or lying on the ground.—ED.]

## SWARMING CONTROLLED

By Shutting the Queen on one Comb in a Perforated Zinc Cage.

BY J. H. BURNS.

Many and various were the methods which I had tried for the regulation or suppression of swarming before I finally hit on the plan which I shall attempt to describe in order that brother bee-keepers may try it for themselves and prove that it will work as successfully in their locality as it has in mine.

All the methods described in the bee-books and journals were unsatisfactory to me because of the element of uncertainty. Clipping the queen's wings is a fairly safe and sure plan; but to make it work properly it is necessary for the bee-keeper to be in the apiary every swarming day; and if many swarms issue at once it keeps a fellow on the jump changing hives, and one can do scarcely any other work without risk of missing a swarm.

Shaking is not a sure method for holding the swarm, in all localities; and, besides, to me it was always a disagreeable operation, fraught with danger to the queen, and liable to make the bees cross.

The modified Alexander method I thought might tend to a better holding of the swarm; but a trial on a small scale seemed to result in less honey, on account, I believed, of dividing the colony before it was strong enough to swarm naturally. For this reason I have always thought that a practicable automatic self-hiver would be just the ideal thing. It would also save the hunting for queens and queen-cells.

The Alley queen-trap is the nearest approach to this desideratum; but they get so insufferably filled with drones that the finding of the queen is a job of great difficulty, and one is never sure whether she is in the trap or not.

Caging the queen in the hive, or giving to a nucleus, seemed the only reliable method; but the hunt for queen-cells was too much for my Irish patience. Besides, I did not like the idea of reducing brood-rearing entirely. Clearly, I wanted a cage which would confine the queen without the bees, realizing that she *was* confined; and if it allowed her to lay eggs, and the bees free access to rear

the brood to some extent, it would serve to keep up the strength of the colony. After days and nights of wrestling with the problem, strangely enough the simple idea of nailing an excluder-zinc on each side of an empty brood-comb suddenly occurred to me. A hole was made in the top-bar, through which the queen was run at the beginning of the swarming season, and kept there till all danger of swarming was past, which, according to late authorities, would be when all open brood was capped. However, I left mine till swarming began to wane with other colonies, in order to be on the safe side, also frequently watching for queen-cells on the frame of brood which the queen kept filled; but I never found any. As fast as the brood hatched in the other combs the bees polished them out and kept a small brood-nest of them waiting for the queen, which, according to some, would be a good preventive of foul and black brood.

When the queen is released she is in good condition for laying, and will rear a lot of young bees for winter. During two years' trial with two colonies I have had no swarms, and good crops of honey. Whether it will work as satisfactorily on all colonies or in other localities I leave for time to demonstrate.

St. Marys, Ont.

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## SWEET CLOVER.

### Why is Not the Yellow Variety More Widely Known?

BY A. L. AMOS.

The little I have written in GLEANINGS started a small avalanche of letters of inquiry to which I have been trying to do justice. Some of these letters were quite interesting. For instance, I got one from California, in which the writer said:

Some 25 years ago I was engaged in the hardware and seed business at Paola, Kan., and for some customer I wrote to an eastern seed-house for a little each of the white and yellow Bokhara clover. They were identical in habit, but I thought the yellow contained more nectar, as the bees were almost crazy for it, and it bloomed from early till late. I now conclude that this is the same as sweet clover referred to. Do you know?

I wonder what became of that yellow sweet clover started so long ago near Paola, Kan. I wonder how it comes that the white sweet clover is known all over and the yellow is not.

Its great merit was recognized in some quarters years ago.

A very interesting letter from the late Mrs. L. Harrison was read by Mr. York at the Illinois State Bee-keepers' convention, held in Chicago in 1896. She said of *Melilotus officinalis*, "This is well known, and gaining in reputation as a forage-plant and for bee-pasture."

When D. A. Jones, of Canada, attended the sessions of the North American Bee-keepers' Association he advocated the merits of what he called Bokhara clover, first, last,

and all the time. Prof. Cook took a plant in his hand that Mr. Jones brought with him, and, standing up smilingly, said, "Look at its root. It's only sweet clover." So it was: but it was *Melilotus officinalis*—the yellow variety. See *American Bee Journal*, 1897, page 34. Ten years ago! Why has it not made greater headway to recognition? That's what puzzles me.

I have looked in many "bee-books," manuals of bee-keeping, to find among the honey-plants *Melilotus alba* alone, instead of being accompanied by its twin-sister, *Melilotus officinalis*. It is mentioned in the A B C, but hardly gets justice. I confidently believe the next edition will have more to say.

I want to see merit find recognition. My experience with the yellow sweet clover is that it is far ahead of the white as a forage-plant. The white does not hold its own when stock feed on it, but the yellow does. Dr. Gandy, of Richardson Co., this State, has had yellow sweet clover for many years, and attributes to it much of his success as a honey-producer. Mrs. Lambrigger, of Knox Co., Neb., wrote of it with enthusiasm some ten years ago.

Comstock, Neb.

[There is really little to say by way of criticism of what Mr. Amos has stated, except that I indorse all that he says. It is possible the yellow sweet clover would grow in Florida, as it flourishes very well in Bermuda, a warmer country, and it is evident it will grow in cold Nebraska without special care, but A. I. Root thinks not. Mr. Amos puts a puzzling question when he asks why such a valuable plant as yellow sweet clover is almost unknown in this country. But this much may be said: There are many valuable plants, animals, birds, and insects awaiting an introduction into this country. As a rule, introducing a new thing is a thankless task, and no money in it for any one. Sainfoin, for example, the finest of all the clovers, has never been successfully introduced into this country. No one can tell why. Read the history of alfalfa in this country, and, in spite of its success in the West, the farmers of the East will not accept it on any account. See also the case of white sweet clover where legislatures pass laws condemning it as a weed, whereas it is a valuable agricultural crop in several countries. It is our business as bee-keepers to stand up and fight the battle of the honey-producing plants or go out of the bee business. This world is, first of all, a fight with ignorance and prejudice.—W. K. M.]

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## THE DANZENBAKER HIVE.

### Can Straight Worker Combs be Secured Without Full Sheets of Foundation?

BY MRS. W. S. WINGATE.

I was much interested in the article on the Danzenbaker hive by Mr. Grant Stanley, in GLEANINGS for Jan. 15. I have been very enthusiastic in regard to that hive for the



production of comb honey, and have used it successfully for the past four or five years. I fully agree with him in regard to the bees building up more rapidly in the spring in this hive than in any other, but I beg to differ with him in his statement that they will build all *worker* comb from starters only. To me this has been a serious objection to the hive. The frames not being pierced for wiring I have not been able to use full sheets of foundation; and every season, but more especially the last one, I would find two or three frames of worker comb, and the rest all drone comb. If there is any way to remedy this, other than using full sheets of foundation, I should be glad to know it. A hive and super that has hand-holes on the *sides* as well as back and front would be much easier for a woman to handle.

When Mr. E. R. Root attended our Minnesota convention some two years ago he promised to bear this in mind, but we have not seen it remedied yet.

"I believe the Danzenbaker super to be the ideal one for the production of perfect sections of comb honey, and I shall certainly try for one of the prizes offered in a late issue of GLEANINGS."

If Mr. Stanley has tried to extract from the Danzenbaker frames without their being wired I hope he has had better success than I have had; for, nine times out of ten, I find the frame minus the comb when taken from the extractor.

A woman who cares for 35 or 40 colonies has not the time to pierce every frame for wiring when making up her hives. So, please tell us *how* to have all worker comb from starters, or pierce the frames so we can use full sheets.

Minneapolis, Minn.

[It is not true, according to general reports, that the Danzenbaker frame would be any more immune to the building of drone comb from starters than any other style of frame. This question of drone-comb building depends almost wholly on three factors, namely: The age of the queen, the condition of the colony at the time the comb is built, and the season of the year. If the queen be a virgin, and there is a flow of honey on, drone comb is almost sure to be built. If the queen be a young layer, and there is a scarcity of egg-laying room, the bees will build worker comb as a rule. If honey is coming in, and there is an intention to swarm, then the building of the new comb will be largely drone.]

The reason why the Danzenbaker frames are not wired is because they are reversible; and it is intended that all combs built in such frames be reversed just long enough so the bees will build clear up against the bottom-bar, which, for temporary purposes, is on top. When a comb of this kind is built solid all around, there is not much danger of the comb being broken in extracting. But there is nothing to prevent one from wiring even Danzenbaker frames; but the wires should not pierce the end-bars, because they

are a close-fitting frame, and such wires would interfere with the hanger-cleats.

To wire Danzenbaker frames, use small staples, driving them in about half their depth along a center line on the inside of the end-bars; then draw the wires through the staples, and fasten. Two strands will probably be sufficient for a Danzenbaker frame. Staples should be short enough so as not to pierce the end-bars, of course.

The writer remembers distinctly the request to have the hand-holes in the side of the hive-bodies; but he could not get the Company to agree to the change. He believes, however, that you are right, and will endeavor to see that it is brought about.—  
ED.]

## THE ALEXANDER PLAN OF BUILDING UP WEAK COLONIES IN THE SPRING.

Why Sectional Hives are Better Adapted for this Method than the Deep Bodies.

BY J. E. HAND.

Some time ago I received the following letter with a request that it be answered in the columns of this journal:

*Dear Sir:*—Will you please reconcile what you say relative to the Alexander plan of putting weak colonies on top of strong ones, on page 565 for last year, with what you say on page 180 for this year? In the first you say, "I heartily endorse" the Alexander plan; while in the second you say the plan "is of very doubtful expediency." ALBERT G. HANN.

Pittstown, N. J., Feb. 20.

I fail to see any discrepancy in my statements on page 565, 1906, and page 180, 1907. In both places I distinctly state that this manipulation is one for which the sectional hive is especially adapted, while in my article on page 180 I go a little further and say that the full-depth hive is not so *well* suited for this manipulation, because it is too much room to give at one time in early spring. If Mr. H. were familiar with the workings of the sectional hive he would readily see why this is so. In the properly constructed sectional hive the brood in early spring will all be in the top section of the brood-chamber; hence in uniting two colonies it is necessary to give only one brood-section of the hive, which is placed at the top of the strong colony, thus placing the brood-nests of the two united colonies as close together as though they were both on one L. frame, while the lower (or bottom) brood-section of the now three-section hive being empty may be removed. However, this empty brood-section is no hindrance to the rapid building-up of the colony, as the bees will pay no attention to these empty combs until the two top brood-sections are solid full of brood, when the lower brood-section should be placed at the top, where it will be quickly filled with brood. With the sectional hives, although we have united two colonies of bees and brood, yet we have really not given any more hive room than either of the colonies had before, for empty combs below the

brood-chamber in the section hive do not count. This is fully explained in my article on page 180; and the brood is in a compact form in the top part of the hive where the heat of the cluster is best conserved. It is not the placing of weak colonies of bees above strong ones that is of doubtful expediency, for the plan is a most excellent one; but the uniting of weak colonies with strong ones, by adding another full-depth hive with only a very small cluster of bees as soon as they are removed from the cellar is quite another thing, and should not be practiced until settled warm weather. For further proofs of this statement, please read Mr. A. J. Snowden's report in GLEANINGS, Sept. 15, page 1189; also a report from Henry Stewart on the same page. I think, with this explanation, and a careful reading of my article on page 180, Mr. Hann will then see that my statements on page 565, 1906, and page 180, 1907, are not in the least conflicting.

Birmingham, Ohio.

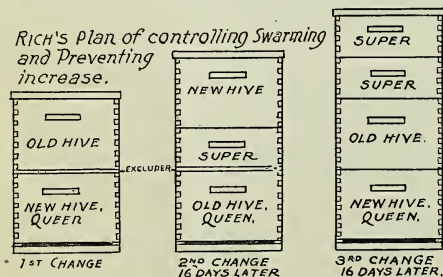
## SWARMING.

How to Prevent and at the Same Time  
Keep Down all Increase; a Modification  
of the Alexander Plan on  
Page 423, Vol. 34.

BY GEORGE W. RICH.

I believe the best method ever advanced through GLEANINGS is the Alexander plan in April 1st GLEANINGS, 1906. I have tried this plan, and it works to perfection, but it increases to one more colony; but, thanks to Mr. Alexander for this plan, for by trying this I have succeeded in controlling swarming, and also preventing all increase.

*Rich's Plan of controlling Swarming  
and Preventing  
increase.*



Here is the plan: You are to proceed at first exactly as Mr. Alexander said, by removing the old hive-body, and place on its bottom a new body filled with frames of foundation or empty combs. Remove the middle frame, and from the old hive take out a frame with brood. Be sure you have the queen on this, and place it in the new body (put the frame removed from the new hive into the old); put a queen-excluding board over, and set the old hive on. In six days examine the old hive above the excluder, and remove all queen-cells. On the 16th day almost all the brood will be hatched; so

place this hive at the bottom again, but take the queen from the new body and place her in the old body. Put on the queen-excluder, and then a super with full sheets of foundation (as the bees are used to storing honey above they will go to work in the super); place the new hive on top of the super. In six days examine this new hive on top and remove all queen-cells, and on the 16th day again remove the top hive to the bottom and place the queen in it; and now the old body, which has been on the bottom, place on top of the one you put the queen in; but leave off the queen-excluder. Put on the super and add as many more as needed.

Watch your bees in early spring; and when they begin to prepare to swarm, then make the first change, and by the time the last change is made they will have no desire to swarm. By this plan the queen has been kept laying all the time. You have increased to more bees than if they had swarmed, and all in one colony. No increase.

Atwood, Tenn.

[The diagram furnished by our correspondent makes the whole method of procedure plain at a glance. We suggest that our writers, in referring to methods like this, sketch off diagrams to show how they proceed. This will save a good deal of time on the part of the reader, and make the method perfectly understood.—ED.]

## MOVING BEES.

Much Smoke Not Necessary; Propolis and  
"Locality."

BY H. E. CROWTHER.

I had always considered it necessary, in moving bees even a short distance, to be very thorough; to use smoke liberally; to jar them up well, and to put an obstruction in front of the new location; but I find that this is, to a great extent, unnecessary.

The method of wintering preferred by Mr. Atwater and others for this part of the country requires the moving together of the bees in the fall, and placing under low sheds facing south, or in position to be covered with tar paper.

I have been surprised at the orderly return of the bees; and if there is any mixing it is peaceable and makes no trouble.

I have just moved a load of bees 35 miles, Nov. 28 and 29, on a dead-axle wagon, with a quantity of straw underneath to break the jar. About half of the bees were shut in with wire screen over the entrances, and the rest of the hives were closed by a stick held up  $\frac{1}{8}$  inch from the bottom to allow a little ventilation.

I can see no difference in the condition of the bees. Both ways were entirely successful; but there was considerable jar and jolt, and I should rather use a spring wagon and be able to travel faster. The bees were on Hoffman frames, so there was no trouble with swing combs.



## THE HOFFMAN FRAME PREFERRED.

The Hoffman with a V edge is still my choice of a frame. They stick together somewhat here on cold days, and snap some on parting; but for all-around utility I have found none better.

Most apiarists have an idea that propolis is just a shade worse in this (his own) locality than anywhere else. Mr. Atwater thought he had propolis; but the bees here can't daub it on as ours back in Ohio did, by any means, especially toward fall and through the buckwheat and goldenrod flows.

Parma, Ida.



PURE RACES VS. MIXED; NECESSITY OF BREEDING ONLY FROM QUEENS OF KNOWN PURITY.

Every now and then the statement is made in the bee journals that hybrid bees are the best. This may be literally true, yet be misleading, and I think you are right when you say that only queens of known purity should be used as breeders. It is a recognized fact by breeders of live stock that the first cross between two different breeds is often superior to either parent; but here the improvement ceases, and no one would think of crossing the breeds, as experience has proved that the offspring of these grades will be nondescript, without type or uniformity, while the breeder who uses pure-bred stock, and breeds with a certain purpose in view, is almost sure of results.

It is, of course, impossible to control the mating of queens; but this makes it all the more important to use only the pure. It is not necessary to discard all the mismated queens, as hybrids may be as good as or even better than the pure, so far as the honey-gathering quality is concerned; but the mismated queens should never be used for queen-rearing, for the reason that those of mixed blood can not transmit their characteristics to the descendants with any degree of certainty; besides, just because a good queen is mismated, that does not by any means prove that she owes her good quality to the mismating. But while hybrids should not be used as breeders, neither should any go to the other extreme and say, "Any thing, so it is pure." It is only by continued selection of the best of the pure-bred that a fixed type of certain quality can be established—at least that is the experience of live-stock breeders; and when this is so in live stock, why should not the same principle hold true in the breeding of bees? Even if Dr. Miller does get more honey (and stings) from his hybrids,

after forty years of improvement, than he can obtain from a few pure queens selected at random, that is no proof to the contrary.

Harlan, Iowa.

A. N. HANSEN.

WHEN DOCTORS DISAGREE, WHO SHALL DECIDE?

I should like to ask a few questions if convenient. If such men as Mr. Doolittle and Alexander can't agree on things pertaining to bees, how is a beginner going to know whose plan to follow? For instance: Mr. Doolittle, in his conversations in GLEANINGS of July 15, 1903, says that feeding back extracted honey to produce comb honey does not pay, and also says that comb honey produced that way does not keep well, and after it has stood three or four months it is almost solid, and thus rendered unsalable, while Mr. Alexander, in GLEANINGS for May 15, 1906, pages 649 and 650, says it pays, and pays well, and not only gets more of it, but gets a better quality of comb honey, and that he received 2 cents a pound for such honey more than the market price. Now, who is right? All the difference I can see in the plans of feeding back is that Mr. Doolittle fed *after* the honey-flow, while Mr. Alexander fed *during* the honey-flow. Would that make the difference?

While I have great respect for Mr. Doolittle and Mr. Alexander, who have made a great success in the bee business, I can't see how they differ so in handling bees and both be so successful, unless there is more than one way to skin a cat. I have tried other plans that they have advocated, with good success, and I am thinking of adopting Mr. Alexander's plan of feeding honey back to bees.

Edw. A. REDDOUT.

Baldwinsville, N. Y., Jan. 17.

[This is a question that we will throw open to our readers to discuss. Possibly Mr. Doolittle or Mr. Alexander can explain the apparent conflict of opinion. We are safe in saying there will be no conflict when all the factors in each case are thoroughly understood. One of these factors, we venture to say, will be locality. While Doolittle and Alexander are separated by only 108 miles in a bee-line, the conditions around one territory are very different from those of the other.—Ed.]

COMB ATTACHED TO THE SEPARATORS; HOW TO PREVENT THIS TROUBLE.

Referring to page 829, "comb attached to separator," I think if care is taken to keep the sections always perpendicular after the foundation is in till the super is on the hive, there will be very much less of this trouble, particularly if large pieces of foundation are used. This has been my experience, at least. After filling supers I used to carry one in each hand; and especially in hot weather the weight of the foundation would cause the free end to bend down, and some of them would not recover their proper positions. In regard to the wire not being always found in the septum, my practice is, after imbed-

ding the wire and before taking up the frame, drop, with a Van Deusen wax-tube, about three drops of wax on each sheet of foundation, one near each end and one in the middle, on the wire. Since doing this I have never found a wire out of place. E. M.

Auburn, N. Y., Sept. 27.

[What you say is very true; but it is, nevertheless, a fact that some bees are very much more inclined to attach comb to separators than others. This has been found to be so pronounced that producers in a few cases have been obliged to pinch the queen's head of the offending bees and put in other blood.]

Comb attachments will be a little more frequent with *any* bees when an effort is made to crowd the sealing of the honey clear out to the wood. In other words, in order to secure extra fancy comb honey, the bee-keeper may have to put up now and then with a comb attachment to the separator or fence.

The difficulty of wire being off the septum of the foundation is most satisfactorily and easily remedied by running a current of electricity through the wire, heating it just enough so it will melt its way down into the foundation. Just the moment this takes place the current is cut off, the wire cooled, when it is nicely imbedded in the very center of the base. In many cases where this work is done nicely it is impossible to determine from which side of the sheet the wire went in, as it can be seen on either side equally plain.

Six dry cells (such as can be obtained at any telephone station) will furnish a current strong enough to heat one wire at a time through a forked metal prong; and if the cells be allowed to "rest" after 100 sheets have been put in, for an hour, the imbedding can be resumed as before. The *modus operandi* is fully explained in A B C of Bee Culture.—Ed.]

#### WIRING THICK-TOP-BAR HOFFMAN FRAMES VERTICALLY; WHY FOUNDATION BUCKLES.

Will you please tell me through GLEANINGS why it is not practical to wire the thick-top Hoffman frames perpendicularly? You mentioned its not being practical two or three times last year, but did not give a reason. I am wiring some frames, and should like to try some perpendicularly, but am afraid there is some little principle that I do not understand that will cause a failure.

No. Bedeque, Can. A. K. WHIDDEN.

[It is entirely practical to wire the thick-top-bar Hoffman frames perpendicularly, although there are quite a number of objections to the plan. One is that it is harder to pierce the thick top-bar for the wires, and another that, if this top-bar is pierced, the wires must then be on the top of the frame right in the way if the frames are ever scraped. Tacks and staples spaced equally distant have been used, the same being driven into the under side of the top-bar and the top side of the bottom-bar. Wires threaded through these and drawn taut have been

used with considerable success. While it involves a considerable amount of labor, yet this extra labor is more than compensated by the lower cost of the lighter-weight foundation which may be used. You might be interested in Dr. Miller's wooden splints. He has such splints cut about  $\frac{1}{8}$  inch square, and as long as the width or depth of the frame, inside measurement. He soaks these splints in wax until they are thoroughly saturated, and then with a pair of tweezers takes them out one by one and lays them on the foundation vertically. The adhering wax causes them to adhere firmly.—Ed.]

#### SALT FOR BEES.

Bees evidently like salt. I set out a pail which had held salted white fish, filled with water to freshen it so that I could use it in the barn; but the bees do all their drinking out of it, so I let them have it. This must be beneficial to them, for they do not touch the fresh water, which is just as accessible.

I am delighted with GLEANINGS. It is certainly a fine magazine. C. GALLIMORE.

Mt. Vernon, O.

[There has been a great amount of testimony showing that bees are partial to salty water. They very often may be found hovering around the seepage of a water-closet.

If borax is not handy, a little sapolio is very good for the removal of propolis; and if that is not available a little gasoline will soften up the gum so it can be removed with a little soap and water.—Ed.]

#### HOW TO KEEP ANTS AWAY FROM BEE-HIVES; SUSPENDING A PLATFORM BY WIRES.

Herewith I send you my remedy for ants, which is sure if my instructions are followed:

Set two posts securely, any distance desired; place a pole on top of these posts, then suspend by wire from this pole any distance desired from the ground a plank (for hives to rest on), secured by these wires. Do not let this plank touch any thing. If grass or weeds touch the plank the ants will reach the hives. In case they do, tie wool around these wires and saturate it with coal oil. I have used this remedy for more than three years. It never fails. In storing honey in the house, suspend the box from the ceiling by wire. W. P. HERMAN.

Molalla, Ore.

#### HOW TO CARRY HONEY TO THE EXTRACTING-HOUSE.

I have just read E. W. Alexander's article on page 1573, Vol. 34, also your footnote. There is one thing I have always thought Mr. Alexander does on a small scale, and that is, carrying honey in combs to the honey-house. We have one man taking off honey and one running the wheelbarrow and taking four or five ten-frame bodies at a load; and if bees are working, put the bodies right back; if not, we put them on about sundown.

Hondo, Tex.

A. H. KNOLLE.



## THE DOOLITTLE PLAN OF NON-SWARMING.

How did F. A. Salisbury get along with the two colonies he shook on the Doolittle plan of non-swarming, as mentioned on page 869, Vol. 34? HERBERT FREAS.

St. Anns, Ont.

[This question was sent to Mr. Salisbury, who replies as follows:]

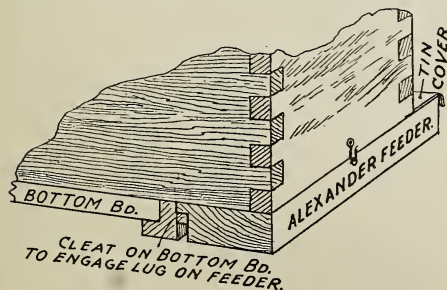
We had very good success. Neither of the colonies swarmed, and we took from them about 170 sections of comb honey. One of them finished only about 50 sections, and the other about 120. We thought, when we shook the bees on the combs of honey, that the one that did not do so very well would probably not. They were very light-colored Italians of a light orange color, and seemed to be of a quiet, contented disposition. They were nice to handle, but were not good for business. The bees of the other colony were hybrids, and had some "go" about them. The brood taken away from both was put on top of a weak colony, which did not swarm. These two brood-chambers are now full of honey, and will weigh about 150 lbs., hives and all. We could have extracted this, but wanted it for next season to try the plan again. I feel it will work in this "locality."

F. A. SALISBURY.

Syracuse, N. Y., Jan. 30, 1907.

## THE ALEXANDER FEEDER; TWO WAYS OF ATTACHING IT TO THE HIVE.

Our hives all stand on the factory-made stands with sloping alighting-boards. These stands are too short to allow a feeder to stand at the rear of the bottom-board when left in a natural position; but if the stand is turned upside down it is then long enough to allow the feeder space on which to stand. We reversed the ends of the stand, rear end in front, which gives a straight end for the bees to climb, providing any should drop on the



ground before reaching the alighting-board, which will be sufficient, usually, when the hive is set back on the bottom-board, to cover the feeder.

If I did not use this kind of stand, and were obliged to hang feeders under the hive, I believe I would adopt a plan I saw neighbor Burnshine, of Ft. Dodge, use. His feeders had a rabbit sawed out on one side, leaving a projecting strip of  $\frac{1}{4}$  inch or more flush with the top side of the feeder; another such

strip was tacked on the rear end of the bottom-board, low enough to let the feeder-strip rest on, so the feeder would be flush with the strips on the bottom which tie said rails together; a hook on the center of the rear end of the hive hooked into an eye on the feeder, which held the outside of the feeder snug up to the hive when the rabbit strip was placed in position on the strip on the hive-bottom. This can not get away, as the hook on the opposite side holds all taut. Where feeders have been made as most are, with no rabbit on the side, a strip can be tacked on to the side of the feeder, which will answer as well.

J. P. BLUNK.

Moorland, Iowa.

## WHY PEOPLE DON'T BUY HONEY.

As to why we do not buy honey to use, my supply gave out a few years ago. I ordered a 60-lb. can from Chicago. It was made by a two-legged bee, and was far inferior to the corn syrup to be found at all groceries, and I doubt if as good for the health. It tasted as if it had been made in an old brass kettle. This kind of experience lasts a long time.

Onarga, Ill.

J. S. WILLIAMS.

## TO REMOVE PROPOLIS.

The best thing I ever tried to remove propolis from the hands is Twenty-mule-team borax. Wet the hands in warm water; dust some borax on them, then rub the dry powder well over the hands. The grit just loosens the sticky stuff nicely, when it will all wash off. Try it and you will be glad.

Hebron, O.

FRANK MCGLADE.

## ANOTHER REMEDY FOR RATS.

I believe I can give you a better way to get rid of rats than is given by I. S. Tilt, p. 418. Pulverize some glass; sift out the coarse particles and use the fine; mix flour, corn meal, and pulverized glass in equal parts; then place them in vessels and sprinkle some sugar over it and place it where the rats can have access to it. It not only kills those that eat it, but the others become alarmed and leave. I have run them away from my place several times with the glass mixture.

Earl Park, Ind.

R. C. YATES.

## STILL ANOTHER REMEDY FOR RATS.

I think you can get rid of the rats by sprinkling powdered copperas in their holes and runs along baseboards, corners, etc. I have found this a perfect success after ferrets, traps, etc., proved failures.

Hyde Park, N. Y.

A. T. COOK.

## COMMISSION MEN.

On page 1425, E. D. Townsend is all right in regard to the commission men. They are more damage than good to the honey-producer.

Niles, Mich.

C. B. FRITTS.



## OUR HOMES

by A. I. ROOT

Lay not up for yourselves treasures upon earth, where moth and rust doth corrupt, and where thieves break through and steal. But lay up for yourselves treasures in heaven, where neither moth nor rust doth corrupt, and where thieves do not break through and steal.—MATT. 6:19, 20.

On page 1594 of last year I told you about being called on to speak in the absence of one of the program speakers at a meeting of the Anti-saloon League convention in St. Louis. As my address appears in the proceedings of the Eleventh Annual Report of the Anti-saloon League of America, I copy from it as follows:

It gives me great pleasure, friends, to stand before you and look into your faces, and I will tell you why it gives me an especial pleasure to-day. Dr. Russell has just been telling you how it was my privilege, under a kind providence, more than a dozen years ago, to give the Anti-saloon League financial help when it was far more needed than it is needed now. I gather from the excellent address of the brother from Maine, who has preceded me, that, like myself, he has at different times in his life been looking out for good investments. I, too, have all my life been in the mercantile business, more or less, in buying and selling, and of all the investments I have ever made, none has given me the satisfaction, through years past, like the money I have put into the Anti-saloon League. The Master said: Lay not up for yourselves treasures on earth, where moth and rust doth corrupt, and where thieves break through and steal; but lay up for yourselves treasures in heaven," etc. Well, the money I have been permitted to give the Anti-saloon League has been more truly "treasures laid up in heaven" than any other investment I have ever made, not even excepting that given missionary work. The interest and dividends on that investment, I see right here before me to-day.

Neither Dr. Russell, Mr. Metcalf, nor myself, had any comprehension, away back in those years, of what this League would amount to, but we had faith. That \$1000 we raised then meant a good deal more than it would mean now. It was then the Anti-saloon League of Ohio. May God be praised, it is now the League of the whole United States of America. Right before me in this beautiful church are the great and good men and women of America—men that are so high above me in learning and scholarly attainment that I feel my—I might almost say—my insignificance, as I never felt it before, and yet God has used, and has use for, even me.

Now, friends, you will be called on, in fact we are all constantly called on, to give of our means to this cause. "Thieves," even yet, "break through and steal," yes, God knows they do in regions where saloons are still plentiful, and "moth and rust doth still corrupt." Shall we not put our money where it will benefit posterity and prove to be "treasures laid up in heaven"?

### THE TEMPERANCE CRUSADE IN WASHINGTON, D. C., FEB. 14, 1907.

On page 342 of our issue for March 1 I made a brief mention of this meeting. Well, I hold in my hand a report of the hearing. The pamphlet is labeled "H. R., No. 6016, to Prohibit the Manufacture and Sale of Intoxicating Liquors in the District of Columbia." I quote from the above pamphlet as follows from Mr. Webber's address:

I wrote a letter (which will be before your committee) to Mr. Macfarland, Commissioner of the District, and received an answer; and without stopping to read the answer, which I offer in evidence (because I have

not the time), I will give you the substance of his statement. He says there are 522 drink-places in the city and District of Columbia, or were a year ago last December, when I received the letter; that they paid \$416,776.60 per annum. Of course, that amount changes somewhat as the years go by, but not much. It increases as the city grows larger. As against this sum of \$416,776.60 is the following: The jailor, or warden of the jail, writes me that it costs in round numbers \$50,000 a year to maintain the jail; the workhouse superintendent writes me that it costs \$95,336 to maintain the workhouse (see his letter), and he says 95 per cent of the inmates there are there through drink, and the jailor says 90 per cent of those who are in the jail are there by reason of drink.

The insane-asylum has something like 1300 inmates, according to the superintendent (see his letter), who are there by reason of drink, and to maintain them it costs something like \$275,000 a year. The District official reports show that, to maintain your police court and criminal courts, it costs about \$885,175 a year. That makes a grand total of \$1,295,511 for these expenses and institutions. Deduct from that the amount that the liquor men pay in (\$416,776.60), and you have \$878,735 still against the taxpayers. To this should be added the annual drink-bill of the District.

The saloon men of my State (and I find that true everywhere, although I have not consulted any saloon men here, but things are about alike the country over) say that the average gross income per day for each saloon is \$15. Now, assuming that they do not sell on Sundays, but keep strictly within the law, the drink-bill of this city and District, put at its lowest estimate, amounts to \$2,500,000 for 365 days—subtract from that sum and the added expenses of the institutions named, \$416,776.60, and you still have for the taxpayers to meet \$3,378,735. I repeat, you will still have for the taxpayers to meet \$3,378,735, as the figures in round numbers still against the taxpayers.

Now, suppose you take that colossal sum and cut it right in two, you still have the enormous sum that the drink costs the citizens of this District yearly of \$1,689,367. These seventeen speakers represent here the churches and all the temperance organizations in this District, and, in fact, they represent these organizations and churches throughout America, and they come here and ask you gentlemen to do your duty. We have come here to do our duty. When this door closes, the responsibility is upon you. We ask you, in the light of all the evidence that shall be adduced here to-day by this cloud of witnesses (if you do not see fit to recommend the bill favorably), report it to the House without recommendation, and let the responsibility rest upon the Members from all over the country.

Mr. Webber here introduced a letter from one of the commissioners of the District of Columbia, Henry B. F. Macfarland, in which he, Macfarland, stated that there were 522 drinking-places in the District. In commenting on this, Mr. Webber says:

These 522 drink-places mentioned in Commissioner Macfarland's letter pay by way of license fees for the right to exist, the sum of \$416,778; against this sum is the following:

|                                                                                                                                                                                                                                                      |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| To maintain jail per year (see jailer's letter).....                                                                                                                                                                                                 | \$ 50,000 |
| To maintain workhouse (see superintendent's letter of workhouse).....                                                                                                                                                                                | 95,336    |
| To maintain insane-asylum (see superintendent's letter).....                                                                                                                                                                                         | 275,000   |
| To maintain police court and criminal courts.....                                                                                                                                                                                                    | 885,175   |
| Total.....                                                                                                                                                                                                                                           | 1,295,511 |
| Subtract.....                                                                                                                                                                                                                                        | 416,778   |
| Saloon tax lacks of paying above sum.....                                                                                                                                                                                                            | 878,733   |
| To this should be added the annual drink bill of the District. The saloon men admit that the average gross income per place is \$15 per day. Assume they do not sell Sundays, at that rate the drink bill of this district amounts per annum to..... | 2,500,000 |
| Total amount paid out for drink and crime, the taxpayers have to meet.....                                                                                                                                                                           | 3,378,733 |

The jailer says that 90 per cent of those in jail got there through drink.

The superintendent of the workhouse says that 95 per cent of those under his charge get there through drink.

The superintendent of the insane-asylum says that about half of his inmates get there through drink, and in his estimate there should be no reduction from the expense, he states, as he gave only the number that are there through drink.

The cost of the police force and criminal courts, we would say, would be reduced only one-half by the



abolition of the saloons; still, the cost of permitting the liquor-traffic to go on in the District amounts to a sum that staggers one. If the \$3,778,733 were divided by two, you still have left against the taxpayers \$1,689,347.

Mr. Webber gives us also letters, some of them lengthy, from the superintendent of the jail, of the workhouse, of the insane-asylum, giving it as their conscientious opinion that strong drink is at the bottom of all these troubles. If I had space I should like to give the letters in full. The pamphlet containing this report has 47 pages. Many of them are mostly fine print; and yet with this great flood of evidence against the saloons the Commissioners of the District of Columbia rendered a decision that it would be "impracticable to enforce such a law as the bill proposes." I respectfully ask these commissioners to go down to Kansas City, Kansas, and talk to the gang that declared it impossible to enforce the prohibition laws in that city of 100,000 people.

Now, friends, this is *our* affair. It rests on the shoulders of every one of us. Shall the very heart and center of our free land *continue* to waste money and send our people to perdition in the way in which the above shows up? I hope every man, woman, and child who gets a sight of this page will read these extracts over and over.



#### HOT-BEDS AND COLD-FRAME SASHES; HOW TO PREVENT THEM FROM BEING BLOWN OFF.

It was recently my pleasure to look over the immense store and greenhouses of the Peter Henderson Co. When Peter Henderson died, several years ago, I had a sort of feeling that the business would run down, at least for a time. I do not know but it is natural for old men to be afraid "the boys" will not succeed in looking after a great business like that "after father is gone." Well, it was one of my happy surprises to notice how this establishment has grown up in almost every way. The greenhouses are not much larger than they were when the great market-gardener and florist, Peter Henderson, was alive. But the seed trade is developed wonderfully.

Just below the greenhouses along the railroad track I saw an immense building with the name of the company on it in gigantic letters. I wondered what such a great building in that locality could be for; but when I got around on another side I saw the single word "Seeds," also in gigantic letters. This immense warehouse, big enough to let a whole train of cars in, was simply to store the seeds they handle. I used to be greatly interested

in growing vegetable-plants; and I was greatly taken up some years ago, as some of you may remember, with Henderson's plan of starting seeds in a greenhouse, and transplanting them into flats to be carried to the open air, so they could be covered with sashes when the weather turned cold. Well, this very thing was going on the day I was there. A big gang of men were carrying the flats out of the greenhouses and depositing them in cold-frames. This was along the last of March. Of course, the different kinds of plants (cabbage, cauliflower, tomato, etc.) will need more or less protection from sashes.

Now, I think every one who has handled sashes very much has had trouble and worry on account of heavy winds blowing the sash off the beds. I have sometimes lost a good many dollars in just a very few minutes, seeing my sashes sail like shingles in a high wind. Various devices have been planned to hold the sashes in place. Hooks and staples to fasten the sashes, sliding them in grooves, etc., have been used. Hooks and staples are almost out of the question if you wish to handle sashes interchangeably, moving them from one bed to another. Well, the Henderson people had a rig that made me smile to think I had not thought of it before. Make your bed as long as you wish. I think some of your beds would hold forty or fifty sashes. In our work we decided on about twenty sashes to each bed, then we could pile them up at each end of the bed when they were not needed, carrying ten sashes one way and ten the other. The plan I saw to hold the sashes was like this:

Put a stake at the end of each bed. Through the top of each stake, a little higher than the glass, put a stout hook. One of these hooks is securely fastened into the stake permanently. The other has a screw thread cut on it, and goes through the stake, with a little crank on the outside end. Now, if you turn this crank you can draw the hook out or in. Well, now, all that is needed to finish is a good stout wire with a loop on each end, just long enough to run from one hook to the other across the middle of all the sashes. When you *work* with the sashes this long wire is dropped down in the path. When you quit work, put your sashes in place; lay your long wire across the middle of the whole string of sashes; then turn your crank until the wire becomes taut. If your sashes are all of an exact width it is an easy matter to draw the stakes toward each other so they will squeeze against the outside bars of the sashes next to the stake. The sashes should reach over, say an inch or two, at the ends of the beds. Now, this not only holds each sash so no wind can move it, but the pressure pushes them up tight together, so there are no cracks left to let frost or cold air through. While at work your sashes are perfectly loose, with no staples nor attachments in the way. Two men will take them off and put them on with great rapidity. When they are all in place it takes but a moment to hook on the wire and then make every thing tight and snug by a few turns of the crank.

In regard to the Peter Henderson Co., perhaps many of you are aware the things that that firm offers for sale are pretty well up in price. But, at the same time, every thing that goes from that institution is first class in every respect. Perhaps the most of us have blundered more or less in buying cheap seeds or cheap implements. The very best is, no doubt, the very cheapest, especially with seeds; but you want to be sure you always get the best when you *pay* for the best. Trading with an old and reliable firm is a pretty good way to be sure.

#### "HIGH PRESSURE" SEED CORN

On p. 1073, Aug. 15, last year, I gave you a corn talk. Later (Dec. 15, p. 1619) I told you about Prof. Holden's book, the A B C of Corn Culture. Well, now, I hope that every one who reads GLEANINGS has already made some tests of his seed corn in the way I outlined in my talk—that is, test the corn from each and every ear. Do not let an ear be used at planting time unless every one of the 6 kernels taken from that ear shows good strong prompt germination. It makes me think of testing eggs before giving them to the hen or putting them in an incubator. We want to go to work with such pains and care that we can *almost* "count our chickens before they are hatched," and count our bushels of corn *before the corn is planted*. Instead of using the arrangement described in the corn-book, we made a level bed in the greenhouse. Then with a straight-edge we ruled it off into squares. Six grains of corn were put in each square. These squares were numbered to correspond with the ears of corn. At this date, April 15, nearly all the kernels have commenced to germinate, demonstrating that our method of keeping seed corn over winter is a very good one. We picked the ears out of the corn-crib at husking-time, and tied them up and hung them from a wire stretched near the steam-pipes in the basement. In this way we insured that our seed corn was kept dry and warm all winter long—no dampness, no frost. Of course, a better way would have been to collect the ears in the field before the corn was cut. Let me now repeat, that, if you grow only half an acre of corn (and I don't know but I might say half that much) 25 cents invested in the corn-book will be one of the best investments ever made. We have already sent out several hundred of these books to our readers who are corn-growers.

And now let me tell you, friends, if you do not look out the State of Ohio will *once more* be the banner State of the Union in the average number of bushels per acre, just as it was last year. Do not fail to get the corn book, and then do not fail to test out the bad ears before planting your corn. Better have your corn planted a little late than to pick your seed corn haphazard out of the corn-crib in the old-fashioned way.

#### WINTER PARADISE APPLES.

I am very glad to learn the name of the Paradise apple; for I had not been able before to identify them. But I know from your description that they are iden-

tical. I have been the closest friend of the Paradise for ten years, enjoying them morning, noon, and night, and often before going to bed. They have been my best doctor for indigestion and constipation. I am sorry you have had a bad opinion of them so long, both on account of their credit and your benefit. I came in possession of two small orchards with a few trees of them in each. They always bore a crop of a few bushels, and as high as forty bushels, twenty of which always go to my own cellar, and the number of trips and family pleasures from them I will not undertake to tell.

If you can stand a little more pleasure from them, I will give you our plan of handling them.

First, do not gather till late in November, or, if the fall is late, till December. Do not be afraid of a freeze, for, as you have learned, it will not hurt them. Just leave them on the trees till thawed. You will be surprised if Mrs. R. (when you gather them) will halve and bake some of them in a closed pan, with enough water to keep moist. If I am not mistaken, you will not be through with them till you begin to sing praises for another blessing. Store them in a cool cellar, and about the holidays you can begin to try them without cooking.

I have just told my wife what I have written. She says I have forgotten a very important part in the baking—that is, a generous supply of sugar when putting them to bake.

Onarga, Ill.

J. S. WILLIAMS.

In regard to the Paradise apple, I am just now, during the middle of April, eating four or five of them every evening about 7 o'clock. At that time I get apple hungry, and I sleep better after having eaten half a dozen apples than by going entirely without them. I have tested it enough so there is no mistake about it; but in order to eat that number of apples without experiencing any uneasiness during the night they must be very mellow and not very tart. An apple on the sweet order rather seems to answer best. I am careful to remove all the peeling, but I greatly enjoy eating the cores, seeds and all. Of course, I take pains to chew them up very thoroughly; in fact, I think apples, to be easy of digestion, should be very thoroughly chewed, and eaten slowly; and taken in this way I find them more refreshing, and wholesome than any kind of cooked apple. Just now I believe I should vote the Winter Paradise not only the most delicious of all apples, but the most delicious fruit God has ever in his loving kindness thrown in my way. Since we have found out how nice they are in the spring we have entirely given up offering them to our neighbors in the fall for 30 cents a bushel, as we did before we knew how nice they are in the spring.

I believe it is true, as suggested above, that this particular apple will stand more frost, and come out all right after it, than any other apple I have had any thing to do with. Will others who have this apple keep it in mind and report? An apple that will stand considerable freezing and come out all right, even when hanging on the tree, is worthy of our consideration.

Just after I finished dictating the above the following was put into my hands:

#### WINTER PARADISE APPLE IN VIRGINIA.

I know nice ripe fruit is a fine drug-store. Should we study the needs of ourselves we might be able to benefit thereby. Here in our old mountain hills we can grow most kinds to perfection. The bitter you mention in Winter Paradise is not noticeable here. It is Fall Paradise—Sweet Paradise, in fact—a grand and delicious apple. Let's have more fruit and better fruit, and cleaner people to eat it.

J. B. OVERFELT.





#### FORCING THE BREEDING QUEEN TO LAY EGGS IN ARTIFICIAL QUEEN-CUPS.

The scope of this work is sufficiently indicated by its title. It is not a large book by any means, but it contains a good deal of meat for all that; and those interested in queen-rearing will be glad to read it. As might be supposed, it is one of the Swarthmore series of little books on the problems of the queen-breeder. It forms one more step on the ladder of successful queen-rearing. Price 25 cents.

#### BUSINESS OUTLOOK.

The cold weather prevailing for the past three weeks in this and many other localities has been very hard on bees, and has had a depressing effect upon trade in supplies. It has given us an opportunity to catch up a little closer on our orders, because of the slackened demand. Orders are keeping us busy to our utmost, and we trust that, with returning fair weather, the season may still be a good one for beekeepers.

#### SECOND-HAND FOUNDATION-MILLS.

We have the following second-hand comb-foundation mills to offer. We give a brief description of each, and shall be pleased to mail a sample of foundation, representing any one or more of these mills, to those interested, on application:

No. 082, 2½x10 medium-brood mill, round cell, late-style frame, in good condition. Price \$15.00.

No. 083 2½x10 medium-brood hex. mill, late-style frame, in good condition. Price \$16.00.

No. 2275, 2½x6 hex. thin-super mill, in good condition. Price \$11.00.

No. 078, 2½x6 hex. thin-super mill, in extra good condition. Price \$12.50.

No. 079, 2½x6 hex. thin-super mill, in extra good condition. Price \$12.50.

No. 085, 2½x6 hex. thin-super mill, in good condition. Price \$12.00.

No. 086, 2½x6 hex. extra-thin-super mill, in good condition. Price \$12.00.

No. 087, 2½x10 hex. light-brood mill, in fine condition. Price \$15.00.

No. 088, 2½x12 old-style Dunham round-cell mill, for heavy brood, in fair condition. Price \$14.00.

#### SPECIAL BARGAINS IN OLD-STYLE STOCK.

We are making some special offers on some old-style goods at some of our branches, which we desire to close out. There are some who prefer some of these older patterns to those adopted since, as we frequently find. To such this is an excellent chance to secure some goods of your choice at special prices.

At our Washington branch we offer:  
77 eight-frame covers, Danz., flat metal-bound, which were standard three or four years ago. They are put together, all ready for use when painted. Price 25 cts. each; 10 for \$2.20, or the lot at 20 cts. each.  
197 ten-frame size, same style, at same price.

60 eight-frame and 32 ten-frame bottom-boards, Danz. style of 1903, with metal-bound tilting floor-board—very convenient for cleaning. Price of either size, 20 cts. each; \$1.70 for ten, or 15 cts. each for the lot.

50 hive-stands with slanting front, not now listed in our catalog. Price 12 cts. each; \$1.00 for 10.

25 hive-stands of an older pattern, without slanting front. Price 10 cts. each; 80 cts. for 10.

At our Philadelphia branch we offer:

89 eight-frame and 500 ten-frame Danz. flat covers, metal bound on ends, same as those at Washington. Price 25 cts. each; \$2.20 for 10; \$20.00 for 100.

10,000 thick-top staple-spaced frames, with end and bottom bars ¾ wide by ¼ inch thick; otherwise they are just like our present style. Price \$2.25 per 100; \$10 per case of 500.

Of our regular pattern, all-wood frames, we have an overstock, which we offer, to reduce it, at \$1.75 per 100; \$7.50 per box of 500.

An overstock of regular B. bottoms, ten-frame size, not reversible, 20 cts. each; \$1.80 for 10; \$17.00 per 100.

Overstock of 10-inch 4-row shipping-cases, with 3-inch glass, at \$8.00 per crate of 50; hold 24 sections, 4¼ x1½ plain; also of 10-inch 2-row shipping-cases, with 3-inch glass, at \$4.50 per crate of 50.

We have at Chicago several hundred slotted section-holders, nailed, which have been used and taken back in exchange for other style of fixtures. These new cost \$2.00 per 100 in the flat. We offer these nailed, ready for use, packed for shipment, at \$1.25 per 100, while they last. While they are somewhat stained with propolis from use, they are a bargain at this price to any one needing this style of section-holder.

We have in stock in Ogden, Utah, to dispose of, 300 thick-top staple-spaced frames at \$2.50 per 100; 300 all-wood frames at \$2.00 per 100; 2 No. 4 Novice extractors at \$8.50 each; 1 bee-tent at \$1.75; 250 folding cartons for 4¼ x1½ sections, \$1.25; 1000 cartons, wrappers, labels, etc., for brick honey, at \$10.00. These goods are offered free on board at Ogden at catalog prices as above, less 10 per cent discount for prompt cash order to close out the stock quick.

## Special Notices by A. I. Root.

#### TESTING SEED CORN.

May be some of the friends will think I am having a great deal to say about seed corn; but if I reach you before your corn is planted I have got to talk fast and quick. In regard to the importance of this matter let me quote from an article in the *Pilgrim* for May, 1907, entitled "Developing Iowa's Gold-mine," by Prof. P. G. Holden, who says:

Last fall I visited a farm of two hundred acres of corn which showed thirty-nine per cent of a stand. During the conversation it developed that the farmer had tested neither the seed nor the planter, and had kept both his boys out of school during the summer to work, as he was "behind" and had "some bad debts to pay." He "intended to test" his "seed," but was so crowded with other work "that he" could not get to it."

If he had spent five or six days in March, when his time was otherwise of little value, in testing the germinating power of every ear of corn, had properly graded it to uniform size of kernels, and had picked out the broken, rotten, and discolored kernels, and had then tested his planter and adjusted the planter-plates to drop the proper number of kernels to the hill, he could have laid off the rest of the year, sent his boys to school, and been more than a thousand dollars ahead. A few days spent at the right time on our seed corn may be worth more to us than a whole year's work.

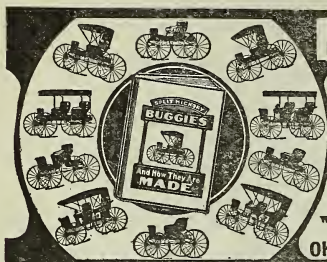
Now, friends, you want to read that over and over. If the grown-up men will not catch on and go to work, get the young men and boys at it. Yes, let the girls read the above extract. Just think of it! the children kept out of school and a loss of over \$1000 just because the old farmer could not understand that "whatsoever a man soweth, that shall he also reap." He is not the only hard-working farmer who has only thirty-nine per cent of a stand just because he could not take a little time to fuss with his seed corn before planting-time came.

Well might Prof. Holden term it the "developing of Iowa's gold-mine." Why, dear friends, I have just this morning returned from a visit to Mr. C. F. Hunter, of Seven Mile, Butler Co., Ohio, where I saw a field where the editor of the *Indiana Farmer* in 1905 measured part of a row and husked the corn, showing a yield at the rate of 247 bushels per acre. I mention this right here simply to indicate to the people of our land the possibilities along the line of the new corn culture. It has been Mr. Hunter's hobby, more or less, for 48 years; and he has been working right along the line of Prof. Holden's lectures. I saw great wagon-loads of ears of corn going to market that I think would average one pound per ear. I expect, in our next issue, to tell you more about it, and to give you some pictures. Let me say once more, do not lose a minute in testing a few grains of corn out of every ear, before you plant it.

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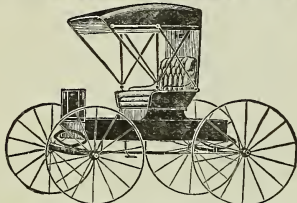
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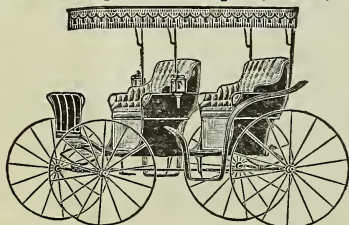
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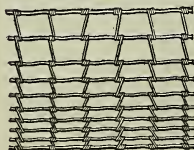
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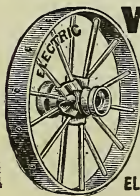
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